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THE GIFT OF

CHARLES ELIOT NORTON,

OF CAMBRIDGE, MASS.,

(Class of 1846),

10 October, 1873.

NATIONAL HEALTH.

BY

HENRY W. ACLAND, F.R.S.

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"Supposons en effet deux populations, l'une immorale et suivant absolument, comme le feraient les animaux, les instincts de la nature, sans se laisser guider par le bon sens ni par les lumières ; et l'autre au contraire une population éclairée, ne connaissant ni le vice, ni de faux principes. La première, dans son existence brute, aura une carrière courte en courant au devant des dangers ; l'autre, au contraire, tâchera de la rendre la plus longue possible. Ces deux carrières, bien différentes, pourront présenter des excès opposés : l'une aura la vie la plus courte, et l'autre la plus longue. Cette probabilité de longueur de la vie est donc inhérente à l'homme, et il faudrait en chercher la valeur dans un calcul qui n'a jamais été fait."—*Quetelet, Anthropométrie, ou Mesure des Différentes Facultés de l'Homme.*

"What, then, is the conclusion inculcated by these doctrines as regards the social progress of great communities? It is, that all political institutions, imperceptibly or visibly, spontaneously or purposely, should tend to the improvement and organisation of national intellect."—*Draper, History of the Intellectual Development of Europe.*

TO

ALL WHO IN THEIR SEVERAL STATIONS

ARE STRIVING TO COMBINE

MORAL WITH MATERIAL PROGRESS,

THESE SIMPLE THOUGHTS ARE DEDICATED.

THE following pages contain the substance of a Lecture delivered in the Royal College of Physicians of England, June 2, 1871, by desire of the President and Council. The Lecture is now published in accordance with the kindly expressed wish of the President. Two documents quoted at the time of delivery are reprinted in full as Appendices: they may be of service to some who might not see the originals.

OXFORD,
June 9, 1871.

NOTE TO SECOND EDITION.

THIS Paper is only altered in the passages which related to Mr. Goschen's Bill, and in one or two references. The introduction of Mr. Stansfeld's proposal will, it is hoped, save a year in legislating on a question which daily presses more and more. That both sides of both Houses of Parliament will unite in passing his simple but efficient Bill for Sanitary Organisation can hardly be doubted. Should any hesitate, they are earnestly requested to read the first Memorandum in the Appendix.

OXFORD,
July 17, 1871.

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I.

THE FOUNDATIONS OF NATIONAL HEALTH.

NO subject has received more impulse in this country within the last twenty-five years than the Prevention of Disease. We are ripe for comprehensive legislation. Mr. Goschen, taking a wide view of the question, lately embodied in a Bill provisions by which the relations of a large proportion of the medical profession to the public may be changed, and a new conception of the functions of medical men may be introduced into every corner of the country. The exigencies of political affairs forced the withdrawal of this Bill. But Mr. Stansfeld, now President of the Poor-Law Board, has with much energy prepared a Bill which will give new powers, and fresh hopes for sanitary administration. It may be well therefore, just now, to sketch the intricate bearings of a subject of no small moment, from the point which seems to offer the fullest conception of the groundwork of National Health. But I admit the all-but

impossibility of the task within the limits assigned to an ordinary Lecture.

If there be a National Health as distinguished from personal health, it is a problem of the last importance to know by what laws the standard of national health is raised, by what it is depressed. If national health is intimately connected with national virtue, and both with national prosperity,—if all have their foundations in the very conditions of human life on the earth,—then it will seem probable that national vice will be found linked with physical weakness and general decline, by the same correlative necessity.

These laws of our being are the expression of the fact, that nations, like individuals, placed in given conditions, must act within certain limits, limits admitted by all, whether they believe them to be bounded by the possible combinations of chance, or assigned by the intelligence of a Superior Will. National habits, good or bad, —national licence and national self-restraint,— national vice and national piety,—national vigour or national indolence,—are propagated through

the individuals of which the nation is composed; being attached to individual character, and handed on from generation to generation, modified however by individual education, or those great catastrophes which, like subsoiling in a barren land, bring about fresh combinations, and give birth to products good or bad, better or worse, as the laws, moral and physical, which regulate the combination, may compel.

It may be alleged against these fundamental conceptions that National Health is a fiction of the mind, that no such collective physical condition exists. The objection would be one of words. Family constitution and hereditary taint certainly exist; and a multitude of individuals forming one army, may, by the operation of moral causes, go anywhere and do anything, or may be without power, without will, without hope.

We must not stop to discuss in full by what subtle links families are bound into peoples, peoples into races; but limiting our view to our own immediate nation, which may serve as an instance for all, consider briefly *how the physical condition of our people has been at-*

tained? and *by what means it may be preserved or improved?* our National Health, in short, *What is it?* and, *What are the duties of the State towards it?*

The health of an individual is, the balanced condition of organs best fitted for due performance of the functions of body and mind within the capacity of the individual.

The National Health is, that condition of the individuals of the nation which enables the individuals of the nation to discharge rightly their respective functions in the state, "to do their duty in the state of life to which they are called;" the statesman to be in training for exercising the complex intellectual operations of his high office; the artisan, the soldier, the abstract thinker, each for his; and if we regard the philosophic teaching of the great author of the "Republic," parents of either sex, for the raising of the future citizens for the state[a].

The sole question which here seems open to cavil is, How far we can influence national health in the wide sense just hinted at? Can the abstract speculations of the "Republic" bear prac-

[a] The Republic of Plato, Book IV.

tical fruit? Can we influence all the factors which are contained in the elements of national health? Let us see what they are.

Take any given Englishman. What is his descent,—Roman, Norman, Saxon, Dane, French? What influences have operated on him since his progenitors were among the number of workers in flint or in bone, or bronze? Did they become farmers, warriors, chiefs? Intellectually accustomed to command or to obey? physically to endure or to shrink? morally thrifty, contented, peaceful or turbulent, drunkards and dissolute? Were they in later times exposed to the diseases of hot climates? Were any syphilitic? did they intermarry in close relationships, or seek far a-field the partners of their lives? What would be the qualities which, like the now famous Black Bar of the Rock Pigeon, might reappear on their scutcheons? pride, pugnacity, syphilis, gout, phthisis? Terrible questions these which the third and fourth generations ask of the sins of their forefathers and of their own. There is much to be said for the Squire who never passed the picture of his great-grandfather, but he

shook his stick at him with an oath and said, "Your drink brought gout down upon us all[b]."

Philosophically, indeed, this most anxious enquiry might, we now know, be pursued, and is being, with rare practical discernment, pursued into the very origin of our race. But I forbear, in a question of great practical import, to do more than remark, that Darwin's discussion has a direct bearing on the conception of national health. It tends to confirm the conviction that acquired habits, whether of body or mind, may be very permanent in a race. That acquired increments for good may be permanent for good we cannot doubt, with the qualification that they must be maintained by each individual of each generation. The potential good being inherited may, by moral or physical struggle, be retained, and the potential evil be to some extent eradicated. But in every case we must believe that the inherited good

[b] The Chinese have very strict notions as to hereditary taint; chiefly, however, on moral grounds. The children of *actors*, among others, for three generations are excluded from the greatest privileges of citizenship, and capital punishments may follow unlawful attempts to exercise them. Not long since, thirty Examiners, including an ex-Chancellor, were put to death for admitting an actor to a competitive examination!

attained, perhaps by generations of valour or virtue, may be, in a moment, shattered like some lovely work of fictile art that was produced only after years of education and months of applied skill.

These general reflections bear mainly on bodily characters, but not wholly so. A woof of mind runs through the web of all animal organisation, and the view we take of the elements of national health is coloured by our conception of the respective relations of body and spirit. When we look abroad on the animal world, we perceive such union of mental and bodily functions, that we are at a loss to say whether the matter, of which the organism is composed, and by which alone the bundle of mental qualities which it possesses can operate in the world, is primarily set in motion by mind, or is itself the *primum mobile*, the basis and very essence of mind. The difficulty of solving this question, so fundamental to all speculation on the organised world, has increased with time, and so the principles on which the education of man shall be conducted have become a subject of yet keener debate. He who believes that we

are but what we see, and handle, and measure, and weigh; he who looks not beyond the present chemical concurrence of some half-hundred elements, combined within themselves; and he who says in his heart, "There is no God;" all these can look on education and on health as problems only of physical science, to be settled by material measures. But without pursuing a subject far too long for our present opportunity, let it be said this hard material view which has once and again cropped up in history, since culture and literature began, cannot be accepted as other than an hypothesis for settling the insoluble problem of the nature of man and his co-tenants of our planet. Look out and see every spot of earth, of water, of air, occupied by beings fitted, if you will, for their place by natural selection; adorned, if you please, by the sexual impulse to display; and what do you find? Material organism fitted to perform certain material functions; bundles of mental powers fitted to put that adapted machinery in operation. Machinery and mind are alike inherited; their qualities improvable, and transmitted; the temper, so to say, of progenitors

lost, and reappearing. Shall any one presume to say that as yet the Genesis or Pan-genesis of this complicated organisation of earth is so known to him, that he can declare that matter alone rules mind, and that mind, whence it is, and what it is, is so understood by him, that he can say it does not and cannot exist alone, does not and cannot act upon what we call matter, can have no independent being. Does the denizen of air, of water, of earth, who is ferocious, attack ferociously, solely because his weapons make him desire to attack? Does he who flees and is timid, flee because his limbs impel him to dive, or to burrow, or to run away? Do you not think he flees for that he is timid, or fights for that he is ferocious? Have his bundle of mental qualities no real existence? Hopeless questions!

If we cannot, with Malebranche, assert that in an understood and understandable manner, "God is in all things, and all things in God," we, at all events, cannot, as scientific men, allow that it is proved that blind chance has made us; and may on this safely appeal to the unprejudiced witness of Darwin, who shews, by

hundreds of instances, the coercive powers of purpose. Moreover, by whatever road man has reached his present state, freedom of action, moral responsibility, are his; and now, at all events, he possesses the will and the reason by which he is mainly distinguished from the varied animal world about him. Throughout the animal world we find skill and power, as in the ant, in the dog, in the tiger; but skill and power little, if ever, improved, because the reason to mould the conditions of existence, and compel nature to be their servant, is absent, or applicable only to single instances. With man, on the contrary, with educated, moral, and progressive man, the skill and the power are becoming evidently correlative with the powers which are locked up in nature, and are attainable by him; and they are, on the whole, transmitted unlost from generation to generation.

Slight and imperfect as is this sketch of the relations of man, in his bodily and his spiritual nature, to the world in which he is placed, the thoughts to which it invites must be present to us, if we are to take a true survey of the ground of national health.

The conclusion to which they point is this—that the soul of man is not the abject slave of mechanical organisation; that in some way which science cannot at present ascertain it acts on, as well as is acted upon by the physical structure through which alone it here exists; and that the groundwork of sound national health lies as much in mental as in physical training and guidance. Thus, a task of the highest importance is imposed on the profession of Medicine. They and they only can be at present expected to be able to measure fairly the strain which the nervous system of the human animal at various ages can bear; they and they only can say what bodily training may be most conducive to mental development, and mental activity. But the problem involves questions far beyond the reach of average men worn by the strife of daily life. Philosophers and Poets have spent some of their greatest efforts on this subject—Milton and Locke in their essays on Education, Rousseau in his Emile, Herbert Spencer in his treatises, and a host of minor thinkers in theirs, have endeavoured to grapple with the question of the

relation between mental and bodily discipline, and, viewing the question from the psychological side, have insisted on guiding the development of the body in order to furnish a fit organism for the mind. A caution must be entered, as public opinion heaves to and fro, lest the physician lay too much stress on material agency, and claim too much value for mechanical appliances in aiding the public health. The union of moral with intellectual and physical health (if indeed they can be separated), can alone save a people entered on the struggle of so-called civilisation. True, indeed, is it that without good sewers and healthy dwellings the poor can neither labour well nor reasonably enjoy their being; but as true that without a pure state of the moral sentiments no material improvements will insure to a people present happiness or permanent stability. Material comfort and material luxury are apt to engender, even in a noble race, meanness of soul, and woe and destruction wait on its fall.

Physicians, therefore, in discussing the grounds of National Health, must compass the whole bearings of this question, if they wish to be fol-

lowed by a sagacious and toiling people. A large-minded promoter of sanitary measures says, in a letter to the people of India, "There is so constant a relation between the health of a people and their social civilisation, that, alas! one of the best indications of the social state of populations is afforded by the number who die year by year[c]." The education of the younger portion of the people in this country is proceeding so rapidly, and the knowledge and conception of material laws, thanks to a periodical literature, which is, on the whole, noble and enlightened, is becoming so much enlarged, that no Health measures which are deficient either by reason of inattention to material wants, or of inattention to moral and intellectual aspirations, or based on the old views of medicine as a purely curative as distinguished from a preventive art, will find public acceptance. To prove this it is sufficient to note the growth of resolute conviction among the people with respect to the abuse of alcohol, and with regard to the necessity of great Engineering works

[c] Miss Nightingale, remarkable letter to the Bengal Social Science Association. See Report on Improvements in India, 1870, p. 290.

for sanitary purposes, such as those carried out in Lancashire under the Poor-Law Board during the Cotton Famine.

Shortly after the existing Poor Law had come into operation in England, a noble controversy arose in Scotland between Chalmers and William Alison, as to whether the care of the sick poor and of the destitute should be left to the voluntary exertions of the charitable, or be placed under the strict eye of the law. The two men were equals in Christian goodness and philanthropy; their experience and their knowledge of the poor was the same. But the science and logic of Alison prevailed. He shewed, once for all, that whatever might have been the evils engendered in England by the Poor Law, the evils of destitution left to charity were greater both to the nation and to the individuals.

The ideas of legal claims to relief on the part of the destitute, and to cure on the part of the sick, are so familiar to this generation, that the early contest against the establishment of these ideas can now be scarcely credited. We are fast reaching a further social conception, that

prevention of sickness is a yet more rational course, and therefore a yet more sacred duty than its *cure.* But the nation requires further familiarity with the proposition before it will accept it; and that familiarity cannot come, until the community at large, as well as the medical profession, have fully realised the obvious proposition, that *prevention* of all disease that is not surgical, and of much disease that is surgical, is as strictly a department of Medicine as *treatment.* They appreciate this in Vaccination and Small-Pox. They do not appreciate the efforts of the younger labourers, who are striving to discover new protection against other scourges of man.

But no medical knowledge, no sanitary provisions, and no sanitary legislation, can make head against laws of nature, physical or moral. If population increases beyond the means of healthy subsistence, disaster must follow. It seems to me that at present sufficient attention is not paid by sanitary writers to the fundamental truths advanced by Malthus, but often overlooked or misunderstood. While we have been honestly endeavouring for the

last twenty-five years to abate the general torpor and selfishness of the previous century, and to stop the growth of further sanitary evils, the average mind of England has not sufficiently heeded the coming, nay, the present, difficulties of over-population. We are too apt to look on the East of London, or the growth of the manufacturing towns, as exceptional instances. They are the necessary consequences of unthriftiness in marriage, of limited area, of difficulty in emigration, and of working and trading for the world.

The reality of our difficulty about population is told in a very few words — England and Wales are increasing by about 200,000 annually. This number will of course increase by a small increment. Since A.D. 1810 the population, which was 10,000,000, has become 22,000,000, and at the same rate will become by A.D. 1920 over 45,000,000. The acres in England and Wales, are about 37,325,000, including waste ground. There are now, therefore, nearly two acres per man; there will be in fifty years not one; in Glasgow there are already 94 inhabitants to an acre, and in Liverpool 103. No

single arrangement can meet the necessities, therefore, of every district. The urban and rural districts have each respectively their sanitary difficulties. The land question presses in one shape in the towns, in another in the country. Here, as in America, or in every manufacturing country, causes suddenly operate to convert rural into urban lands; and to import, into wholly unprepared country districts, all the troubles of an urban population. Of this a striking instance is seen in the coal districts of Durham and Northumberland, many more in Lancashire and Yorkshire.

The danger of all these circumstances in relation to national health is admirably stated by Professor Fawcett:—

"It will, therefore, be well distinctly to appreciate what is implied in bringing into operation causes which will produce greater mortality; some definite idea may be formed on the subject, by considering the results involved in the present high death-rate prevailing amongst the children of the poor. Assume that there are 1,000 of these children, that 500 of them die before the age of five, whereas if they were

as well cared for as the children of more wealthy parents, only 200 of them would die before this age. The death, therefore, of 300 is to be traced to defects in our social and economic condition. These children are literally slaughtered, and in a manner, moreover, which indicates prolonged suffering. But this is only a part, and perhaps the smaller part, of the mischief which is done; the causes which produce this excessive mortality do not alone affect the children who die; all those who survive are also brought under the same blighting influence. Consequently, to all the struggle for existence becomes more severe, the more weakly succumb; even the stronger who survive, in passing through the trying ordeal, often contract the germs of future disease, their constitutions being in too many cases undermined. Physical deterioration ensues, and a whole people may thus become gradually stunted and enfeebled [d]."

It is not possible to reflect on this subject

[d] Professor Fawcett: "Pauperism, its Causes and Remedies," p. 108. London, 1871. A book which cannot be too widely read.

without recognising the truth of the proposition that, making every allowance for the action of counteracting causes, excessive development of a population on a limited area like Great Britain, must in the end be disastrous to the nation, unless, first, the population can be kept healthy, and, secondly, the commodities of life are obtainable to a commensurate extent. The arithmetical bearings of this point have been sketched by Mr. Samuel Ruggles, in a Report to the President of the United States[e].

The conclusion, then, seems almost forced upon us, that whenever our population increases beyond the power of our area to maintain it, two effects will follow, more especially in times of commotion—increased pauperism, increased disease among the adults. If philanthropic or legislative efforts succeed, there will be added, the rearing of wretched children, incapable in

[e] Printed by order of the U. S. Senate, March 31, 1871. I am indebted for this paper, and for other kindnesses, to the Hon. B. Moran, Secretary of the U. S. legation. John Lambert, Esq., C.B., has referred me to an interesting work on the condition of the poor, by another Mr. Ruggles, viz., "The History of the Poor and the Laws respecting them," by Thomas Ruggles, Esq., 1797. This scarce work contains many thoughts of permanent value.

body and mind; multiplication of lunatic asylums, reformatories, and workhouse schools, and crushing taxation of the industrious, capable, and healthy.

Conversely, if the preventive checks of Malthus, and especially education, (in which I place first, moral culture, however attained,) can be brought into operation, two results might be expected; first, that the population may be kept in some check; and secondly, that the internal administration of the country may be greatly improved by the political sense of the masses. Through these two causes there may be hope for the nation. It is doubtless true, first, that in the history of the world we have seen nations almost brought to a stand by epidemics, as, for instance, in various parts of Europe during the fourteenth century by the astonishing ravages of Black Death; secondly, some check is induced by wars; and thirdly, an excessive mortality of children produces the same results. The operation of these natural checks is eminently uncertain, and to count upon them as substitutes for self-control, prudence in marriage, and good political administration, is deliberately

to substitute the instinctive life of brutes or savages for the progressive experience, the reason and morality of the human race, and to accept the destiny which such life brings with it. When savages and brutes meet in conflict with civilised man, that destiny has usually been extinction.

Moreover, whatever difference of opinion there may be at present as to the origin, first of species, and secondarily of race, constitution, and individual temperament, there can be none as to the effect of food, climate, habits of life, and culture, either upon the individual or the progeny. It is sufficient here to remark on the feebleness of the descendants of Europeans in India, notwithstanding the vigour of the first generation, and on the rapidity with which the Anglo-Saxon race has changed in North America. Doubtless the limits of variation of man, or of any race of men, have not yet been determined; but we are rapidly approaching precise knowledge on the subject. Life insurance offices will ere long furnish a fund of information; and the labours of our great statisticians, when they include sickness returns from the public health autho-

rities, will give all attainable scientific information of the causes and nature of health fluctuations in this country, in comparison with the same in other countries. To say truth, the accumulating knowledge of the facts of Humanity is becoming more marvellous than the fancies of Utopia. The newspapers tell us weekly—thanks to the sagacity of Major Graham and of Dr. William Farr—the comparative death-rates of great towns not only in England but on the continent of Europe, in India, and at New York. We are able to judge what the energy and determination of one man can do in controlling the health-destiny of vast populations, by studying the admirable results of the work of Dr. Hewlett [f] in Bombay, and the sanitary progress in Calcutta. India bids fair to set us an example of accomplished sanitary administration, which will be fruitful alike of knowledge and of practical benefits to the people [g]. Nor is this all. Quetelet [h] and

[f] Dr. Hewlett's Quarterly Reports on Bombay.

[g] See various Reports on Health of India, for the last five years.

[h] Anthropometrie de l'Homme, 1870, and Essai de Physique Sociale, edit. 2, 1869.

Galton[i] have opened a mine of precise knowledge regarding the finer causes of "limits of variation" which have been just touched upon. Quetelet, indeed, has proved what, *à priori*, might have been safely inferred, that the limits of the factors of human nature, whether mental or bodily, may be fairly expressed in terms of mathematical formula and curves; so that, indeed, the average proportion out of a given number of persons possessing any mental quality may be as directly predicated as their heights or their weights. It is true that this is only the expression of a fact which it does not explain. But Francis Galton has with great skill, in his work on Hereditary Genius, shewn some of the consequences of this fact or law. They are startling. Just "as a cook combines or creates a dinner, the fish director can create," he says, "a particular sort of fish[k] according to a predetermined pattern;" then, he adds, "the reflections raised by what has been stated of fish are equally applicable to the life of man." "The entire human race,

[i] Hereditary Genius, 1869.

[k] Galton, "Hereditary Genius," 1869, p. 373.

or any one of its varieties, may indefinitely increase its number by a system of early marriages, or it may wholly annihilate itself by the observance of celibacy. It may also introduce new human forms by means of the intermarriage of varieties, and of a change in the conditions of life." Galton's speculations—I ought rather to say, his logical and precise discussion — should be carefully weighed by every thinker on public health, because, in one sense, it is directly opposed to the conclusions of Malthus. He has worked out the effects of early and late marriages in respect of progeny, and has shewn that, given certain conditions to two races, M or N,—one, M, marrying early, and N marrying late,—at the end of *one* century the mature men of M will be four times as numerous as those of N ; at the end of two centuries, ten times ; and at the end of three centuries, twenty-seven times as numerous. Now if M were reckless and imprudent, and N careful and prudent, all else being equal (which, however, would not be the case), the prudent race would be driven out of the field. A terrible disaster! "It may seem monstrous

that the weak should be crowded out by the strong, but it is still more monstrous that the races best fitted to play their part on the stage of life should be crowded out by the incompetent, the ailing, and the desponding." In forming a fair estimate of the whole of this question, many other causes would have to be considered, and their effects calculated. But reason tells us that there must be some relative value in lives, though the human eye may fail to count it right. There is a moral in the tale of the fowlers in the Northern Seas. As the three egg-hunters are, one by one, drawn up along the face of the cliff by the same rope, highest is fastened the lad, the father next, and last the grandsire. If the strain is over great, the lowest, least worth, is to cut the rope and fall into the abyss ; next, if need be, the father ; so that the chafing strands may perchance save that life which may be longest and is youngest. So is it in nature. We have our being under just and necessary laws, moulded by hidden causes we cannot see nor understand.

II.

HOW THE FOUNDATIONS ARE SAPPED.

SUCH being the general conception of the foundations of national health, it would at first seem to be an easy task to describe the causes which may sap them. It would be easy, if dealing with a social *tabula rasa*. In an old country, however, growing with unprecedented rapidity on a limited area, the questions involved touch every point of political economy. Theories concerning population, religion, liberty, existing privileges, and natural rights, are to be met, accepted, or denied at every point. Ignorance and prejudice have to be dealt with among honest persons, self-interest with the unpatriotic. The haste to be rich among the unwise, the intolerance among the cultivated of opinions counted narrow, and inadequate appreciation of the extent to which our world lies under law, (binding even the seeming free agency of man,) all check the progress of popular knowledge as to the foundation of Na-

tional Health. Take the single illustration of Mills on streams. How long, after the effect of damp subsoil in injuring the health of the people has been proved, is it just to a population that one man should keep up mill-dams to such a height as to swell his profits by some small per centage, and destroy his neighbour's health, when other arrangements might, with little loss to him, at once abate the evil. It is an instance of a thousand. The mill owner, it is true, would have claim to compensation for his prior rights, earlier occupancy, and interests hitherto permitted, nay, protected, by law. But the human race and every civilised community is essentially progressive, and no society ought to shrink from dealing with rights which have produced consequences essentially different from anything that could have been contemplated when they were allowed to grow up. One main duty of the present age of the world, and in this country urgent, is to strive to prepare for coming generations.

The foundations of the National Health may be sapped in so many ways, that the catalogue is as long as it is dismal. Bad air,

bad food, bad clothing, deficient fuel, too long hours at work, intemperance, all excesses, excessive exercise, excessive study, fanaticism, gluttony, idleness, late hours, intermarriage among unfit persons, depressing passions—as gambling, whether in hells or on the Stock Market—overcrowding and bad lodgings, bad dwellings, or dwellings on unfit sites, all engender disease, and deteriorate the race. They produce struma, rickets, gout, hypochondriasis, and many other diseases, with consequent loss of power, imperfect work, moroseness, and misery to others besides those affected, in an ever-expanding circle.

Again, bad water produces not only actual *fatal* disease in individuals, but short of that, as was stated at length and with much acuteness long since by Hippocrates[a], engenders continuous feeble health, when acting either with or without the other causes above-named. These various mischief-bringing elements in the "pangenetic" structure of society may act either on a single person, or on the masses. Some act on the poor, some on the rich, some equally on both. Time forbids me to analyse or extend

[a] In his treatise on "Air, Water, and Places."

the list, and shew the precise way in which each member of the ghastly catalogue acts on the human constitution. I will only add one instance formerly quoted by me elsewhere. A girl, having been seduced, entered a workhouse. A female child was born. She was brought up in the union, and was there at school till nearly of age. She went out, straightway became first a prostitute, then syphilitic; returned to the workhouse, and brought forth a syphilitic infant, to be reared, like her mother, with difficulty. There she lives in misery, and may perhaps repeat the dismal tragedy of her grandparent and of her parent at the cost of the nation.

But are we sure that the needless waste of the higher kind of life is not in other ways as reckless and as pitiful? I do not speak of death by war or by avoidable accidents, of mad races against time by sea, or of wholly unnecessary speed by rail, though these imply mischievous wear and tear to individuals and to classes of men; but I allude to useless wear and tear of health imposed on public men, and the waste thereby of power valuable to the nation.

For instance, the House of Commons contains within it the picked executive of a free people, who have deliberately selected them from the whole nation for the decision of the greatest problems of the national life. Yet custom will allow that Ministers thus carefully selected for their special aptitude to do the finest work, are often occupied more than half the night on formal and unimportant discussions. Thus the real work of their office is done under unnecessary pressure such as none but the most robust can bear, and their health fails perhaps at the moment of their highest administrative perfection.

Again,—The buildings which public men occupy are often far less calculated for maintaining health than they might be; and trifling as may seem the remark, it is to be doubted if they can always obtain with readiness food suited to the necessity of exhausted nerve-power. There can be no doubt that actual illnesses are often brought on from these two avoidable causes.

We cannot, however, now consider all the ways in which the habits or pressure of civilised life needlessly tend to waste the force, and

crush the physical elasticity of the people. Instances of various kinds will occur to every mind. Let these, from the extremes of the social scale, suffice for illustration. Rather let us here seek, if means of prevention may be found such as will pervade the whole framework of the national life.

III.

HOW THE FOUNDATIONS ARE STRENGTHENED.

IF the foundations of National Health be of the kind we have stated, and the causes which may sap them so general, so diverse, and so engrained in the nature of things, then the principles which have to guide mankind in maintaining the physical stability of nations cannot be less fundamental and extensive. Now we must not conceal from ourselves the fact that, if we except some eastern and some barbarian races, the whole history of mankind tells of two conditions—progress and decay. National hibernation is, in a low state of national life, perhaps possible; but the awakening is generally by the rude shock of a destroyer, who lives on the ashes of a race he came professing to revive. In four short years a whole tribe of North American Indians has died out under the advance of civilisation. There is nothing in history more solemn than this flowing and ebbing of nations. It were blindness not to

see that civilised people, in the surging to and fro of modern material life, are bursting the barriers of all former experience. So entirely are the telegraph and facile transport modifying opinions, equalising the knowledge of distant states, and welding it into one world-wide public opinion, that the problems presented to the modern Statesman are almost as new as when Roman law was being consolidated.

History would seem to teach that as long as love of conquest follows possession of power, and as long as the human frame consists of an intricate combination of tender organic tissue, so long physical changes may be expected from violent political movement; and waves of disease, whether cholera, syphilis, small-pox, black death, fever, or the diseases that follow famine, may sweep over the denser masses of mankind. One can neither contemplate without admiration the order of great modern cities, nor look without anxiety on their danger. How instructive—materially, morally, intellectually—is now the great drama of Western Europe, in which almost every virtue and every crime has been flashed before our eyes, as

though to shew how unstable still is the fabric of society.

There are four classes of persons who have the physical conditions of the nation more or less in their power: first, the lawgivers; second, the physicians; third, the ministers of religion and teachers; fourth, the people.

The lawgivers in a free country are almost limited to legalising public opinion, but may promote a wide or a narrow conception of the State, according to the type of their own convictions.

The physicians are the guardians of public health, bound as much to prevent as to cure disease.

The ministers of religion and teachers are the instructors of the people, either knowing or not knowing what conduces to National Health.

The masses of the people modify their own conditions by good or bad habits, physical, moral, and intellectual.

It is certainly not too much to say that, before the present century, public opinion—as depending upon people, ministers of religion and teachers, physicians, and lawgivers—was, as far

as regards the public health, entirely below the necessities of mankind. This is at once proved, by the alterations which we now know may be made to take place in the death-rate of armies and of towns by proper sanitary regulations, or the neglect of them. The question suggests itself, How the public opinion on this matter is to be raised to the best attainable standard? The modern answer is, By Education.

But Education itself must have a definite aim, and be based on an intelligent conception of the end to be attained, and the means of attaining it, whether they be physical, moral, intellectual. One cannot contemplate without astonishment the spectacle of the three hundred millions of Chinese—a third of the human race—who have cohered, almost unaltered for some thousands of years, with the stability of the crystal, without the growth of a living organisation. Compulsory education of a low kind seems to have effected this[a]. Education by a

[a] There is no stranger chapter in statecraft than the history and practice of the competitive examinations in China. Sir Bartle Frere was so kind as to direct me to a photographic account of this in "Social Life of the Chinese," by Justus Doolittle, vol. ii. (New York, 1865).

stereotyped method, necessarily produces similar results in successive generations. In this Western world we have seen feudal rule gradually giving way to self-regulation by the people; obedience to self-government; empiricism to positive science; and hypothesis to knowledge of facts. Some would say, superstition is being replaced by reason, emotion and instinct by intellect, moral self-discipline by scientific knowledge. Be this as it may, the conviction is gaining every day more strength, that however true it may be that, as has been advanced above, the mind has influence over the body, it is as true that National Health cannot be fully secured without strict attention to the material conditions in which the people are placed. This consideration has of late years occupied the attention of our statesmen. Regulations affecting trades, workshops, mines, shipping, dwelling-houses, have within twenty-five years reached such dimensions as to have a literature of their own. We have not, therefore, so much to discuss the necessity of this attention, as the principles on which, in immensely widening circumstances, it should be

directed into practical results. Those principles mainly rest on the following considerations :—

That no individual should for his own profit poison his neighbour.

That the State must, in certain things essential for health, assist the masses in what they cannot assist themselves.

That the cost of permanent sanitary improvements should be borne in some reasonable proportion by posterity.

That compulsion of the ignorant in sanitary matters, when their ignorance injures society, is justifiable.

That compulsion will, we hope, be unnecessary when scientific education is adequately extended.

That good conduct, based either on knowledge or on obedience, is as essential to health, as is any physical arrangement which is not an actual necessary of life.

That in the present state of the world, mischief-bringing ignorance in sanitary questions is especially inexcusable in the law-making classes.

That local government by the people, well informed by a central authority, is essential to the physical education of the nation.

For the practical working out of these principles, legislators have to devise education worthy the name. Education depends on very complex questions, affecting the whole nature of man and the very structure of society. It is now thoroughly understood that the emotions, the will, and the mere action of the reason, affect not only individual organs, but the whole frame and the general health. Not only may individuals, if ill-educated, become virtually of unsound mind, but so may whole masses of people.

There is a "glory in the determined will" which produces vigorous bodily as well as vigorous mental action. You see it in the contour of the man. A perfectly trained nation, morally, intellectually, and physically, will act in its sphere as an individual so trained. It will respect and be respected.

We have seen in the dancing Mania of the fourteenth century the extent to which, in a superstitious age, masses may be moved to

emotional madness. Is it certain that, unconsciously to themselves, there may not sweep over nations equally contagious *intellectual* errors depending upon faulty morality? It is mainly a question for the psychologist and statesman, but it is also a question for the thinker on public health—what manner of life in the several classes of men and women, what labour, what recreation, what personal habit of body, conduces most to that tone of the nervous system, which puts the nerve-power of each man at the best for the discharge of his duty as a citizen. The worn-out man, the speculator, the vicious man, and, still more, masses of such men, become, from physical causes, intellectually and morally unfit to form a sound public opinion.

Now a people is educationally affected by indirect nearly as much as by direct means.

Take a single and minor instance,—the indirect educational effect of music on the children of a rural district. Music, like other things, is of two kinds—bad and good. It may be a source of foulness, disorder, degradation, impiety—even the Christmas carol—may lead

to the public-house, to folly, and to drunkenness; or it may, in Wordsworth's words, though rude in its kind, be

> "A true revival of the light
> Which nature and these rustic powers
> In simple childhood, spread through ours."

We know how, through ballads and songs such as the "Wacht am Rhein," vigour is thrown into the hearts of a nation. So, also, pure and good music is a sure and powerful instrument for refinement when superadded to other intellectual attainment. In one aspect it is purely sensuous, and may, as with some refined Tyrolean singer, be pursued as a dexterous art or accomplishment. But even as *art* it may not be undervalued. It excites feelings of the warmest sympathy and admiration to hear the attained results of Leslie's Choir, or such societies as now exist in many of our towns, where persons of every class and occupation shew an advanced mastery and appreciation of the choice works of Handel, Mozart, Beethoven, Mendelssohn, and acquire a pure culture unalloyed by eating or drinking, or other frivolous ways; culture, moreover, not of a light kind,

but one which ensures the development of certain mental qualities of accuracy, attention, precision, and refinement, which may be equalled but not surpassed by the exercise of other of our faculties.

The right care of the body is, therefore, such a management of the instrument by whose agency mental actions are alone possible here, as that the body shall obey the inner spirit in its higher impulses. To this all philosophy tends, whether expressed by the conceptions of the "Republic" of Plato, the "Utopia" of More, the "Atlantis" of Bacon. For this the Apostle of the Gentiles taught the duty of "keeping the body in subjection;" this was the aim of the mistaken self-tortures of the astonishing Ascetics of Alexandria; of the yearnings of Comte; of the manly teaching of the great English Physiological Text-Book; of the labour of all labourers for public health, of Chadwick, of Southwood Smith, Shaftesbury, Farr, Rumsey, both the Trevelyans, Matthew. These all seek, in bettering the conditions of the body, to give free play to the divine element that is in the mind of men. We must not let ourselves

be diverted from our great practical aim by the fascination of philosophic enquiry into the causes of things. What is the past history of man as compared with the well-doing of the present, for the sake, not of ourselves alone, but of those that are yet to come? What avail to us the virtues of feudal days, if we neglect to cultivate their virtues in our own? Were the Crusades, indeed, a worthier end for man than the redeeming from destruction the bodies and the souls of the struggling millions of Ireland or London? Was there ever a nobler task for the energy of noble or prince than the harmonising relief by law with willing relief from the charitable heart[c]? than dis-

[c] Almost all the practical thinkers in this country seem to look at the relation of relief, whether legal or voluntary, to labour, as a most urgent question. Notwithstanding the wise labours of Lord Derby, Sir Charles Trevelyan, Mr. G. M. Hicks, with a host of coadjutors, we must despair of any permanent work in this direction, until the Ministry of Health and Relief has been established, as the pivot for combined operation. Sir Charles Trevelyan truly writes :—

"I am convinced more strongly than ever that there is no single specific for London pauperism, and that if our metropolitan population is ever to be restored to an industrious, provident, independent character, it must be by a whole cycle of

cussions on the terrible question now before the nation, whether it is best for the moral and physical health of the people that the law of Elizabeth should continue, though it cost nearly seven millions annually to maintain it: or whether it is best with Chalmers, to throw on the voluntary alms of the rich the care of the poor? Do we concede the moral obligation of maintenance assumed by Elizabeth, and refuse to carry it into effect by law? or shall we divide the healthy from the sick, and grant to the sick what we withhold from the sound? If so, do we reasonably protect the sound from becoming sick, when we leave them unaided in matters in which they cannot aid themselves?

Or again; Germany, and now England, have practically decided that their millions ought to be compulsorily educated, i.e. that their *minds* shall be disciplined. Have they yet concluded that, on the same broad principle, the body shall be cared for in all essentials for health, so as to

measures directed against all the influences which have reduced it to its present state."

This remark equally applies to National Health.

give to the school a reasonable chance of doing its work? Take the case of the three essentials of life,—Food, Air, Water; (Clothing, Habitations, Fuel, and Work, being minor necessities, depending chiefly on the exigencies of climate, may be omitted).—Is there yet a country which systematically punishes a man for wilfully or negligently poisoning another's food, air, and water, as well as for stealing his brushwood, turnips, or wild-fowl? But all old countries are being forced again to consider what are the elementary conditions of life, and are revising from various points the methods of adjusting them to the necessities of complicated civilisation; drawing lessons from all past experience, from the village communities of India to the land tenures of Scandinavia [d], and applying them to the new and yet undeveloped conditions in which we find ourselves placed.

So, when we come to consider what is to be reasonably required of the Legislature under the circumstances which have been now stated, it would seem as though we had to describe

[d] See "Village Communities in the East and the West," by Henry Sumner Maine, 1871.

what should be the whole internal economy of the State.

There is scarce a department of the State which is not connected with the public health. Wherever there is army or marine, school or factory, workshop or prison; wherever a town, a village or a hospital,—there the State has to decide in what particulars the employer or the worker under him, the landlord or the tenant, the owner or the occupier, the vendor or the purchaser, the manufacturer or the consumer, shall lose his free agency, and be forced to subject his will to that of the majority in the State. Legislation has been steadily progressive, though the progress in this country has been made under needless difficulty, and at unjustifiable expense. Local acts for every conceivable purpose, voluntary associations for innumerable ends, have, after much agitation and labour, obtained remedies for evils, some of which ought not to have existed at all; some which, existing lawfully, ought, on due compensation, to be abated. The authorities who should abate them are numerous, and often conflicting.

Much time was lost in the period from Howard to Shaftesbury, and from Pringle to Sidney Herbert. The laws, the arts, and the sciences on which the preservation of health depend, are growing up under the eyes of the present generation. If we are living on the verge of an epoch of great social difficulty, we are also living at a moment when there was never so great knowledge, never so bright a light, and never more patient desire in every class to set aside injustice, and discover the means by which opportunity may be given to the capable and industrious, help to the weak, and knowledge to the ignorant. Whoever has had experience of the public work of the country, must know that the offices of our Government, concerned in these questions, have the hearty services of men whose labours and characters should be no less our admiration than our example. To omit to say this much would be unworthy and ungrateful: to name the persons would not become me. What, then, remains to be done? Two things, and two only,—

First, To continue to interest, intelligently,

the mass of the people in sanitary progress, and to interest them more systematically.

England must rule herself in this as in all other matters. The time is gone when people can be dragooned into cleanliness and virtue. We hear that the middle class of England is inefficient, the guardians of the poor bad, and the working-classes ignorant. If so, still they are the people; they and their children pay the penalty of disease and of vice. Shew them, truly and without exaggeration, the source of avoidable disease and of destructive vice,—they will abate it. Bring the knowledge to their doors,—they have heart and will; give the power by enactment, and the work is done.

Second, To establish such a Health Department in the Metropolis, as shall with certainty appreciate the growing wants of the people, as shall bring in Bills to meet their wants, and shall disseminate information and advice without stint to every part of the country.

Jeremy Bentham saw clearly the necessity of a Health Minister. The "talents specially required of him and his various subordinates"

were to be,—"Medical Art and Science in all its branches; Chemical Art and Science, all its branches; Mechanical Art and Science, various branches; Natural History, most of its branches; Geography, in so far as regards climate and temperature, of countries which members of the community may have occasion to visit, either for war or trade[e]."

To him were to belong[f] all duties with respect to the medical functionaries serving under the *Indigence Relief Minister;* to the regulation of hospitals, lazarettos, and public laboratories; the medical inspection of prisons, madhouses, edifices belonging to the service of the Indigence Minister, and the Education Minister; of all "shops and storehouses, in which drugs designed to be employed for medical purposes are kept for sale, or otherwise for distribution; more particularly with reference to the precautionary arrangements directed to be observed by the *Preventive Minister* relating to the sale of poisons;" so also as to the contents of all shops for chirurgical purposes, and "all

[e] Jeremy Bentham, Works, by Bowring, vol. ix. p. 273.
[f] Ibid., p. 443.

medicines and drugs designed to be employed for medical purposes," and to be conveyed to the army service, navy service, or the Indigence Relief Hospital service.

He was also to see to the water supply of towns, and to have "consideration of their extent and the density of their population," including the "quantity, quality, and proportionality of distribution." He was to have under review all such "situations as are liable to harbour or give rise to exhalations detrimental to health," such as "lands which, to whatsoever proprietors belonging, are habitually or occasionally covered with stagnant water;" mines, considered in respect of such dangerous gases as they are liable to contain; common sewers and drains; theatres, and other similarly crowded places of entertainment, and places of interment; manufacturing establishments, as far as regards health. He will superintend the bills of mortality. He will report on mortality and diseases in the hospitals and establishments under the management of the army, navy, preventive service, indigence relief, and education ministers. Also he will elicit and record "from the several

different places registers of the weather, in so far as habitually framed and preserved in the record establishments above-mentioned; also from any other public sources from whence they may conveniently be procured, and from private sources, so far as procurable from those sources, with the free consent of the individuals interested." He is also to have "instructional" museums for shewing the registrars' reports above referred to, and other objects. Moreover, the Health Minister is to be responsible for all examinations of aspirants "to those offices, the functions of which are exercises of the art of medicine in any of its several branches, and to whatsoever subject applied." To him "it will especially belong to be upon the watch against all injury to the health of the community, by the operation of particular interests in the breasts of medical practitioners at the expense of public interest; and, as occasion calls, to make report accordingly."

To the result of the exercise of these functions, he is to give the utmost publicity that can be given consistently with a due regard

to public economy and the feelings of persons subject to the exercise of his functions.

Since Bentham's time, the arrangements for the relief of the poor have become far more complete. A fashion now prevails among irresponsible persons of attacking this department of the State. The officials are hard, the laws are inefficient; or, on the other side, the officials are lax, and the laws breed pauperism. Instances are produced on either side. The fact is, the circumstance that every person in England is safe from starvation is a safety-valve in the working of a machine under high pressure, and the ubiquity of the staff of the poor-law, acquainted with every lodging of the poorest, gives in the present day an organisation which is unequalled. Time would fail, nor is it needful, to state in detail, the value of this machinery, if we are in earnest to secure prevention, as well as cure, of disease. Invest the Guardians of rural districts with adequate power, give them the requisite knowledge, appoint persons to the office with special qualifications, and trust them, on behalf of the people, to do all that can be done for maintaining the na-

tional health in their district. Keep the medical officers informed of all established knowledge bearing on health functions; give them in the eyes of their fellow-men an honourable office; and a scientific and trained staff is at once to your hand in every corner of the nation. The arrangements for the great centres of population must be different. Special officers, still in connection with the relief staff, must be retained, and relieved of all curative functions. Their number, and the conditions of their appointment, will vary with the wants of their district. They will be centres of all existing knowledge of preventive measures, and a means thereby of maintaining an interest in sound progressive scientific knowledge. They will, in this department, be as the parochial clergy of the middle ages, who were the local centres of the knowledge and culture of their day. In a Memorandum[5] contained in the second volume of the Report of the Royal Sanitary Commission, which I cannot name without recording the debt which is due to the energy, skill, and patience of Sir Charles Adderley, its Chair-

[5] See Appendix A.

man, is contained a sketch of the possible functions of such medical officers. They may seem to some excessive, and what once were called unpractical; but it is not hard to foresee the value of them, and what pleasure the discharge of them would bring to the neighbourhood, as well as to a medical man of culture in rural districts. He also would know that his public work was appreciated, and, that being part of a great national system, it would never be wasted. It is non-appreciation and sense of wasted effort, as well as want of guidance, which has made many a youth entering life discard the culture and aspirations of his student days, and let down his tastes, and sometimes his habits, to the level of the most uncultivated of his neighbours. In considering the bearings of this subject, the medical profession has to remember, that however indebted the world has been in past time to it for a large portion of its physical science, the day of exclusive possession by any class of the Ark of natural knowledge is gone by. The medical practitioner will often find, and every year more and more, a worthy match in biology

among the laymen and ministers of his district. These will be his coadjutors or his critics, just as his own attainments and habits may decide. The modern student of medicine has little to dread from the competition.

I would refer to the report of the Sanitary Commission, for details as to the medical officers of health, and their official coadjutors, as well as for discussions concerning the Area over which they should act. The good working of the *local authorities* does not depend entirely upon their constitution. Bentham evidently relied on the *central authority* for regulating and instructing the local executive. The Bill introduced by Mr. Goschen, arrived at the same result. By Part VI. and a few clauses in Part VIII. of that Bill, the central authority was to consist of a Minister, who should preside over the public health, relief of the poor, and all local government connected therewith. The subjects now distributed through various offices, would be united under the direction of this Minister. It is a misfortune that in consequence of being linked with the complex and difficult cognate question of incidence of

local taxation, the clauses which would have made the strong central health office were withdrawn with the fiscal portions. They were not necessarily connected. The executive, indeed, once remodelled, would have fresh powers to adjust further detail. It would be wholly premature, if it were becoming, here to inquire into the detailed construction of the office of the Health Minister. Suffice it that, when that portion of the Bill has passed, the prevention of disease, and the promotion of national health will take equal rank with the first preservative functions of the State, and everything else connected with the office and its executive will fall into place.

The office will start with a staff connected with every spot in the country. The kind of complementary aid, and the extent of aid which the office may require, will be quickly discovered, and all that is valuable in the functions described in Bentham's crabbed system will be performed. In connection with these functions it may not be out of place to quote from the memorandum of the Sanitary Commission the following details.

Under the Minister there would be sub-departments for—

"*a.* Law of local government.

"*b.* Engineering.

"*c.* Registration and statistics.

"*d.* Relief of poor.

"*e.* Medical care of public health and poor.

"*f.* Legislation bearing on the profession of medicine.

"III. A body of inspectors attached to the Health Office. These are to be of two kinds, as at present, with a third body of consulting experts.

"1st. General inspectors attached to, and generally residing in the 'registration divisions,' 'poor-law districts,' or (as they will also be) 'public health areas.'

"2nd. Special inspectors, viz. legal, engineering, scientific, and medical.

"3rd. Special experts, whose names should be attached to the Office, and who should advise professionally on special points for special fees, such persons to be appointed for five years and re-eligible.

"4th. Then will be required local clerks of unions, and of town councils, local surveyors under local boards and unions, local public health (medical) officers of local boards, unions, parishes, subordinate executive officers.

"No office now existing need be destroyed. Some

will be amplified. A few more clerks will be required at the Central Office, and an arrangement made for obtaining special advice when needed, in aid of the permanent staff of the office, and of the inspectors.

"The advantages are many. Not only will the plan be efficient and complete, but it will be economical. The work of the Local Government, Law, and Engineering departments, of the Registrar-General, of the Poor-Law Board, of the medical adviser of the Privy Council, will be harmonized, and will never be chargeable either with unnecessary repetitions or with omission, as at present. So also, neither money nor skill will be wasted.

"All reports bearing on public health will be connected one with the other, mutually illustrating each other. They will cover the whole ground of the science of prevention of disease, which has become both so important and serious for the well-being of old and densely-peopled countries. The connection of the office of the Minister of Health with the medical profession, 4,000 members of which would be in direct relation to him, would in itself be beneficial to the whole country. It would disseminate established scientific knowledge uniformly through the country districts, affecting not the medical man only, but the clergy and the schools, doing in that way alone as much at least as direct legislation for the same purpose could do. It would bring to light

in every corner all that could be advanced as bearing on the physical condition of the masses of the people, while all crude theories or impracticable plans would instantly fade before the experience of the Central Office.

"The publications of the statistical department would exhibit what could be shewn of the progress of sickness. They might give also useful deductions from local meteorological and scientific observations, in connection with those of Kew, the Government Meteorological Office, the Meteorological Society of Scotland, and such private enterprises as those of Mr. George Symonds on rainfall. They would furnish data for sanitary maps, which can only be of any worth when carefully constructed on rigorous local knowledge, and they would in time get rid of the fallacious application of conclusions deduced from averages, and erroneously applied to particular places or instances. In this way, the real causes of variation in death-rate would be more surely ascertained than at present.

"Great encouragement should be given to the local public health officers to send in any observations which would promote the progress of accurate knowledge.

"The British Public Health Reports thus constructed, printed in an uniform 8vo. form, stitched in five parts, (legal, statistical, engineering, medical (including medico-legal), and general papers of inspec-

tors,) would be a series of great value. The Central Office should immediately on the first issue of the collected series make arrangement for regular interchange with all foreign countries of similar reports, according to the established usages of academies. These documents should be accessible for reference in the public health library of the minister, to all persons connected with the department.

"Public Health laboratories should be maintained or aided by grants from time to time. In them not only points bearing on the general pathology of man and animals, would be from time to time investigated under the best guidance, but persons would be trained to be thoroughly qualified in all medico-legal questions. Hereby some of the scandal of ex-parte scientific witnesses might be checked or removed. Such laboratories should be aided or maintained as well in the metropolis as in some of the great towns where scientific institutions and medical schools exist, e.g. Oxford, Cambridge, Birmingham, Leeds, Newcastle, Bristol. These centres are conveniently situated for various sections of the kingdom. From the state-aided laboratories the inspectors would obtain analyses of waters or, in disputed cases, of any substances requiring examination."

The following passage also demands special consideration:—

"In giving a judgment on the question of State

organisation relative to public health, much of the general tenor of modern legislation with respect to our internal economy should be present to the mind. It must therefore be remembered that those who will be responsible for local sanitary administration will have collectively, if not individually, to administer Acts bearing on the following subjects:

"§ 10. 1. Plans bearing on sanitary engineering or on local government, i.e., drainage, sewerage, water supply, baths and washhouses, nuisances, offensive trades, smoke, public places of recreation, streets and roads, buildings, cellars, and lodgings, burial-grounds, mortuaries, appointments of officers, artisans' dwellings, labourers' dwellings.

"2. Care of personal health and safety, i.e. health in factories and workshops, mines, bakehouses, dangerous occupations.

"3. Regulation of quality of food, i.e., adulterations, markets, diseased cattle, slaughterhouses.

"4. Medical, i.e., prevention of disease, epidemics, endemics, syphilitic disease, small-pox (vaccination), quarantine, lunacy, hospitals, whether, first, rate supported, such as workhouse hospitals, or hospitals under local boards, or secondly, voluntary, whether general or special, endowed or subscriptional,

county or small village hospitals, or hospitals for the insane, and prisons, sale and adulteration of drugs, poisons, supervision of reports of officers of health.

"5. To which must be added medico-legal arbitrations."

An important step has been recently taken by Dr. Stokes, the Regius Professor of Medicine in Dublin, and his colleagues. They have instituted an examination with the view of granting a diploma in the subjects bearing on National Health, or, as it is sometimes called, State Medicine. This examination, of which full particulars are given at the end of the present Essay, will comprise certain parts of Law, Engineering, Pathology, Vital and Sanitary Statistics, Chemistry, Meteorology, and Medical Jurisprudence. That such opportunity of systematically learning what is essential to the maintenance of the National Health should be now given by Trinity College, Dublin [h], does great honour to that enlightened body. It is to be hoped that ere long, a learned compendium of the required knowledge will issue from the Irish

[h] See Appendix B.

press. Any one who has studied this subject knows, that in consequence of the labours of Parkes[i], Simon[k], Farr[l], Seaton[m], Glen[n], Rumsey[o], Rawlinson[p], Stewart[q], Tom Taylor[r], A. S. Taylor[s], Christison, Miss Nightingale[t], the London, Liverpool, and Glasgow Medical Officers of Health, and in other countries, Quetelet[u], Pet-

[i] Parkes, E. A., "A Manual of Practical Hygiene, prepared especially for use in the Medical Service of the Army." 3rd. edit. (London, 1869.)

[k] Simon, J., "Reports of the Medical Officer of the Privy Council. 1858—70."

[l] Farr, W., "Yearly Reports" in Registrar-General's Reports.

[m] Seaton, E. C., "A Handbook of Vaccination." (London, 1868.)

[n] Glen, W. C., "The Law Relating to the Public Health and Local Government in Relation to Sanitary and other Matters." 5th. edit. (London, 1869.)

[o] Rumsey, H. W., "On State Medicine in Great Britain and Ireland." (London, 1867.)

[p] Rawlinson, R., Various Government Reports.

[q] Stewart, Dr. A. P. and E. Jenkins. "The Medical and Legal Aspects of Sanitary Reform."

[r] Taylor, Tom, Various Government Reports.

[s] Taylor, A. S., "Principles and Practice of Medical Jurisprudence." (London, 1865.)

[t] Nightingale, Florence, various Sanitary Works, especially India.

[u] Quetelet, A., "Physique sociale, ou essai sur le développement des facultés de l'homme." 2 vols. (Bruxelles, 1869.)

tenkofer[x], Michel Levy[y], Hammond[z], Bowditch[a], Derby[a], and other persons, there has been amassed so much valuable matter, that the time is come when selection and abridgment are indispensable for the guidance of the student.

I must apologise for the length to which these simple thoughts have led me. They are uttered now because the time is certainly come when we must all endeavour, in our yearnings for the material improvement of our people, thoroughly to comprehend the fundamental and combined laws of Physiological and Social science on which our nature rests. Their complexity depends chiefly on the mutual action or re-action of matter and of mind in individuals, together

"Anthropométrie ou mesure des différentes facultés de l'homme." (Bruxelles, 1870.)

[x] Pettenkofer, M., "Die Cholera und die Bodenbeschaffenheit in der k.k. osterreichischen Provinz Krain." (München, 1861.)

[y] Michel Levy, "Traité d'hygiène publique et privée." 5th edit. (Paris, 1869.)

[z] Hammond, W. A., "A Treatise on Hygiene, with special reference to the Military Service." (Philadelphia, 1863.)

[a] Bowditch and Derby, "Reports of the State Board of Health of Massachusetts."

Many of these authors have contributed far more than is here named.

with some superadded perturbation of civilized life, from which the savage is exempt[b]. The laws of our material nature are as absolute as those of the unreasoning brutes. But, in some particulars, they are entirely subject to our will, which is not the case with any other creatures. It cannot be said, indeed, of the past life of the human race,—

> "Old age and experience, hand in hand,
> Lead it to death, and make it understand,
> After a season so painful and so long,
> That all our life we have been in the Wrong;"

but this nevertheless is true, that historical and political experience, combined with the intercommunication of ideas by telegraph, and of persons by steam, is changing the conception, the conditions, and future of humanity, whether for good or for evil, with wholly unprecedented rapidity; and this is so, not in one country, but surely and steadily through the whole world. It is quite certain that education, acting with political causes, will modify the structure of old countries. It is quite certain that education, if possible without due attention to the mate-

[b] See Thomas Ruggles, op. cit. Letter I.

rial conditions of the people, will add mental suffering to physical. The modifications in the material state of man will be happily effected, in proportion as they coincide with the laws of the universe, or run athwart them. Every attempted rebellion against their spiritual or material conditions will necessarily end in certain and deep disaster to the rebellious race. Our sanitary regulations must be based on a right comprehension of these laws; on a conviction that material advantages, though essential for man, are not all; that material comforts will not remedy the results of immorality; and that wisely devised sanitary arrangements, the attainment of which, even by compulsion, has not yet been achieved, would in all probability be spontaneously carried out by an educated, free, and God-fearing people.

APPENDIX A.

(See p. 58.)

EXTRACT FROM REPORT OF THE ROYAL SANITARY COMMISSION, 1871, vol. ii. p. 351.

MEMORANDUM ON MEDICAL OFFICERS OF PUBLIC HEALTH.

§ 1. THE duties of the medical officers of public health must necessarily be considered in connexion with several complex questions of central and of local administration.

The Commission has unanimously come to the conclusion that every question affecting public health should be brought into relation with one central office, presided over by a minister. Every health officer would thus stand directly or indirectly in official relation to such a minister.

§ 2. It has been further decided that every district, urban, suburban, or rural, should, in respect of its public health, be as closely connected with the said department of health as is every part of the country with the Home Office through the police and the magistrates, and as are the destitute with the Poor-Law Board through the guardians of the district in which they are resident.

In short, that every person shall henceforward be

entitled to such reasonable public protection in respect of his health as he is in respect of his liberty and his property. For instance, he shall no more be liable to have the water of his well poisoned by the neglect of his neighbour, than to be robbed with impunity.

And he is to be under this protection, as far as it is reasonably attainable, everywhere and at all times.

The *first* principle, therefore, of sanitary administration is that no member of the community shall wilfully or for profit damage another man's supply of the three absolute essentials of life, food, water, and air; and therefore that it is the duty of the State to secure, as far as possible, that these essentials shall be supplied, in sufficient quantity, and the greatest attainable purity, in all circumstances in which these objects cannot be attained by individual care and resources. In this point of view it may appear a question whether the State should allow that any man, even by prescription, shall be held to have acquired the right to pollute, for his own advantage, another man's food, water, or air, or in any manner poison him. At any rate, care should be taken that no one shall acquire such right in future.

The *second* requirement of sanitary administration is universality, through constant supervision by public health officers in every part of the country.

The efficiency of the agents in sanitary administration is as important as their ubiquity.

They must be well-instructed and capable, without the pedantry or officiousness of sciolists. Ignorance, pretentiousness, or over-meddling on the part of the agents would bring into disrepute any sanitary system. In a free country disrepute would bring about failure. Fitness in the agents is the *third* requisite in sanitary legislation.

Though an all-pervading system of sanitary experts be thus necessary for a densely-peopled community, living in artificial or non-natural conditions singularly unfavourable to health, yet the very exigencies of such a community make it unlikely that in this country any costly system of sanitary inspection can be established at present; any proposed system must therefore be economical. Though at present the State must spend great sums on experimental armaments and weapons of destruction, it may hesitate to make costly experiments for the prevention of possible or contingent sources of ill-health. Those who are strong doubt the necessity, those who are sick—happily the minority—have not power sufficient to promote great schemes. Economy is therefore the *fourth* essential principle of Sanitary Administration.

Constant and universal supervision of the essentials of public health, by competent persons, economically conducted, being then the true object to be aimed at in sanitary legislation, we propose in this Memorandum to consider:

I. The supervision required.

II. The qualifications of the agents employed.

III. How complete sanitary organisation can be best obtained.

I. The Supervision required.

§ 3. The nature of the supervision required will be clearly indicated by the whole tenour of our report and the documents which accompany it. It may be comprised under these heads :

1. Statistical; 2. Legal; 3. Engineering; 4. Chemical; 5. Medical.

Statistical supervision comprises the whole system of registration of births, deaths, marriages, diseases, and of the census. Everywhere, therefore, a registrar of these particulars is required, and such registrars, except for sickness not necessarily followed by death, already exist.

Heretofore the laws concerning the public health have been fitfully progressive, and so ambiguous, confused, or conflicting, that sanitary law has been either imperfectly understood or imperfectly acted on. But in so far as corporations or guardians have been health authorities, there has been in every district an authorized legal adviser or a clerk who is or ought to be conversant with public health law and public health literature.

Sanitary engineering is one of the youngest branches

of applied science, and therefore it is not to be wondered at that experts in it have hitherto been few. The practice of it is often imperfect, often costly; more often still it is not only imperfect and costly, but unsatisfactory also; unsatisfactory in its general views and plans, and falling below existing knowledge in details of every description. The proof may be found in the fact that the very rules of water supply, of the construction of sewers and drains, of the disposal of sewage, and of smoke consumption, are still the subjects of constant dispute. The laudable efforts of the Thames Conservators to fix a standard of the amount of organic impurity which makes water unfit for human drink, the exposure by the River Commission of the reports made in favour of the Leamington system of drainage, and many statements adduced in our evidence, suggest the extent of scientific work that remains to be done before Government can accept opinions on disputed sanitary points from engineers of average skill in their profession. We say this for the protection of the public, not from engineers but from themselves. The public are too apt to underrate the knowledge and qualities requisite for giving trustworthy advice in this direction. It is, therefore, important for the interest of ratepayers that there should be systematic and ready means of obtaining the most skilled supervision and arbitration on all large plans or works. We cannot too highly praise the action of the Local Government Act Office, both

in the legal and engineering departments; and we can but recommend the extension of the staff under Mr. Tom Taylor and Mr. Rawlinson, according to the exigencies of the work thrown on the office. But to this we shall have occasion to revert elsewhere.

Under this head we include also such special physical knowledge bearing on public health as is neither, strictly speaking, in the Engineering nor in the Medical Department. It is acquired only by specially trained persons; of whom there have been in recent times not a few successful examples.

In illustration, we may cite arbitrations and opinions on nice medico-legal questions; for instance, whether a water was or was not poisonous, and if so, whether by means of a neighbouring cesspool; and if so, whether avoidably and therefore culpably, leaving the further question of amount of damages to the courts of law, but laying down the scientific facts as on behalf of the Crown, and not of the contending parties. So also of injuries from smoke, from paper-hangings, dye stuffs, and numerous points, not strictly medical, but lying in the province of skilled chemical and scientific authorities.

These few statements will have established two things; first, that there are several subjects, not medical, which demand constant and universal attention in public health administration; and secondly, that a universal inspection, properly called medical, has to be organised even when provision has been made for

registration, law, engineering, and scientific inquiry. We do not say that many members of the medical staff cannot discharge all the above duties; that question will be discussed later, when the apportionment of the several functions and duties comprised under the terms Preventive and State Medicine is considered in detail. We here only remark, *firstly*, that a principal duty of most Public Health Officers is, and will be, the treatment of disease among the sick poor, and *secondly*, that there are few questions relative to the prevention of disease or other injury to the health of the population, in which there is not a medical element, which can be best disposed of by a properly educated medical man.

§ 4. This being so, the basis of the public health staff in this country may with great advantage (in consequence of the universal presence of the sick poor) be the body of men now known under the name of *Poor-Law Medical Officers*, a staff of public officers paid out of public funds.

Of these there are already in England alone about 4,000. After attentively considering this central point, and having regard to the three principles already enumerated, viz., universality, efficiency, and economy, we find ourselves driven to the conclusion that they form the most eligible basis of sanitary executive in Great Britain.

We admit *in limine* that an objection may be taken by some who associate the idea of inferiority with the

name of parish doctor. But such notions should be set aside as now no longer applicable either to the medical profession or the administration of the Poor-Law. That gigantic instrument of social charity, if chargeable with some evils, is at least unique in the good which it attempts. It seeks to be "universal, efficient, and economical," and however it may break down in details, we unhesitatingly point to it as being, in respect of the medical portion of public health administration, a trustworthy power ready to our hands.

We have in other parts of our report enumerated the various arguments for and against the expediency of taking counties, unions, parishes, and river-basins, as the sanitary units or areas; and we have freely discussed the question of the fitness or unfitness of county boards, union and parish officers, and River Commissioners, for the regulation of this part of the local arrangements of the kingdom. Of the propriety of the selection of the Poor-Law Medical Officers as the permanent agents in the disease-prevention-organisation we have no doubt. The following reasons for this conclusion will also help to illustrate their duties, and their place in the general health administration.

1st. These officers exist already and everywhere.

2nd. They are intimately acquainted with the habits of the poorer classes, the classes which most need assistance. They are themselves fairly educated, and belong to that part of

the middle class which combines sterling practical habits with considerable culture, and live a life which itself is a perpetual education.

There is no large class of men more certain to keep up to the level of established and tested scientific knowledge, none less likely to give way hurriedly to fantastic systems of organization, or to theoretical views of the perfectibility of the lower orders. They have had a scientific education, and are essentially benevolent and practically humane. Their life is spent in striving to alleviate the greatest calamities of the most suffering, that is, of those who being willing to work are disabled by enfeebled health, or actual disease.

Penetrating every corner of the filthiest districts at the ghastliest moments, succouring the vicious when they are disposed (if ever) to repent, and tending the innocent who are ruined in body by the sins of those who begat them; hundreds of these men do their duty, their hearts beating with sympathy, sighing for power to remove causes the effects of which they are incompetent to check. And lastly, being themselves far from rich, they are thrifty, and as little disposed to increase unnecessary taxation as the most indifferent or most incredulous opponent of "sanitary reform."

Of these men there are in England, as has been said, about 4,000. It is true they were organised for the purpose of cure, because till a recent period cure

was popularly held to be the sole attribute of medicine; but they would gladly employ prevention, had they the power. The central authority has only to assign to them the duty.

We will now briefly state what are the duties which we should assign to the ordinary parochial medical officer, bearing in mind that the typical example is that of a rural or suburban officer, and not one of those employed in the larger urban populations under municipal authorities, with salaries which make them independent of private professional income.

II. Qualifications of the Sanitary Agents to be employed.

(a.) *Duties of Local Medical Officers of Public Health.*

§ 5. First. The ordinary duties of the curative medical officer should be regulated as at present by the guardians or the local health authority and the Central Office, with such modifications as might be from time to time determined.

Second. The Central Office should furnish the medical officer directly, or through the local registrar, with a form for returns of sickness which would be filled up and transmitted to the Central Office monthly or quarterly, the registrar of births, deaths, and marriages having first filled up the columns relating to

these matters on the same sheet before handing it to the medical officer.

This duty should devolve on the medical officer in charge of the union hospital, through whom all other sickness returns from the union (where there is more than one officer in the union) would be transmitted.

Third. The Central Office should furnish a form of return for the general sanitary condition of the district, such return containing spaces for statements as to the general conditions of houses, hamlets, yards, water supply, and drainage, and also for observations on special local causes of ill-health, whether in food supply, dwellings, wages, employments, or drunkenness. Such returns should be periodically transmitted to the district inspectors through the Sanitary Committee of the local authority, just as in Ireland the minutes of every meeting of boards of guardians are transmitted on the following day to the Commissioners' Office in Dublin, and as sickness returns drawn up by the medical officers were returned weekly during the prevalence of cholera in 1860, to the same Central Office from all infected districts.

Fourth. Such officers as desired or were willing to undertake the charge should be supplied by the Central Office with instruments for meteorological observation and for water analysis.

Those who undertook to supply analysis of the water or reports on the meteorology of the district should be furnished periodically with a series of all

the Minister's health reports published by the Central Office during the continuance of such scientific work[a].

Fifth. The medical officer charged with the duty of furnishing the returns above stated will not henceforward be removable by the local authority. He will therefore be more independent of it than heretofore, and may have confided to him new and important functions. He may be empowered to require from inspectors of nuisances, the police, and registrars of births, deaths, and marriages, any such information within their departments as may help in completing the public health reports on his district.

Sixth. Nothing in our proposal as above stated is to hinder such ordinary public health officer from becoming also inspector of nuisances, inspector of workshops, inspector of factories, registrar, coroner,

[a] The Army Medical Department supplies to the army medical officers cases prepared for the purpose of analysis of waters, and, when demanded by the senior officer of a station, meteorological instruments. The present small pay of the Civil State medical officers would make such a grant imperative. With respect to the distribution of meteorological instruments, if the want of them were shewn, it would fall naturally within the province of the science grant to South Kensington to furnish them. Whether the instruments should be lent on the deposit of their value, or on what conditions, would be matter of detailed arrangement between the applicants and the Central Office. The returns must be simple. Among the indirect advantages of such a plan would be the educational effect on rural districts. The medical officer should not be required to make observations himself, nor to keep the records, but to be responsible for them.

In many instances, probably in conjunction with the clergyman or schoolmaster, observations of a rigorous character might be made, in conjunction with the Government Meteorological Department, and Mr. George Symonds' Observations on Rainfall.

hospital surgeon or physician, if he be able and willing to discharge in addition the functions of one or more of those offices respectively. We do not think all these officers should be required to have a diploma of State Medicine, should such diploma be granted under a new Medical Act, or by existing universities that have the power. This question will be more fully considered in another section. (See Section 11, page 92).

Seventh. We do not wish to be understood as affirming that the existing poor-law officer of a district, or any such hereinafter to be appointed, is to be the sole medical practitioner eligible to the post of public health officer; or as suggesting that local authorities may not employ in place of the ordinary public health officer a practitioner of higher attainments or qualifications, at a higher salary, or debarred from private practice. But we think such exceptional arrangements should be made under the direct sanction of the Public Health Minister.

Eighth. We wish to say emphatically that we assume that arrangements will be made to assimilate the practice of the whole kingdom with respect to the supply of medicines for the medical officers of unions to that of Ireland. In Ireland medicine and all medical and surgical appliances, trusses, and instruments, are always found out of the poor-rates, quite independently of the payment of the medical officer. To this provision, for which, did space per-

mit, many reasons might be given, and to a provision for superannuation, or any other which might put public medical health officers on an equal footing with other branches of the Civil Service, we attach great importance.

§ 6. Such being the proposed duties of public health officers, we have to add a few words on their qualifications.

All these officers would be necessarily registered medical practitioners, fully qualified to discharge all the ordinary duties of medical, surgical, and obstetrical practice. They are so accounted even now under existing regulations. Whether they be so now or not, the Government Bill lately withdrawn would have ensured for the future public confidence in the education and examination of all registered practitioners [b].

Men so qualified would be able to discharge with ease as well as efficiency many important functions. In the clerical work of the returns they might be

[b] The bill was withdrawn in the House of Commons by Mr. Forster, after it had passed the House of Lords. It was withdrawn because an adverse opposition had been organised by certain members of the medical profession at a moment when there was not an hour left that could be devoted to an opposed bill. So that it was reluctantly sacrificed to objections which had been already maturely weighed and set aside by the Government.

We may nevertheless hope that no real evil will be caused by the delay. In some respects we are glad that our recommendations should be before the Government whenever the constitution of a permanent council of medical education is reconsidered. Further reasons for this will appear in other parts of the report. No alteration in the medical Acts or the medical Council should henceforward be made without reference to the Health Minister's Department, and the complex organisation which that implies.

authorised to avail themselves of the help of the union officers. The medical officer should not be charged with unnecessary book-keeping. The facts should be given by him; but as far as possible the books should be kept for him.

His careful suggestions, the result of observation and experience, accessible to all ratepayers, in a copy kept at the union office and transmitted periodically to the Central Office, would be valuable in more ways than we need pause to enumerate. Suffice it to say that they would be permanent records of sanitary wants and sanitary progress, always useful as unpublished local records; and in many instances (as shewn by the valuable notes of the registrars in the Registrar-General's report) worthy of publication.

Another circumstance too important to be left unmentioned is, the beneficial effect this arrangement would have directly on the medical profession and indirectly on the country at large.

From the moment the arrangement we propose became actual fact, there would be at least one medical man in every rural district in immediate communication with a Minister whose office would be the centre of all existing knowledge which bore on the health of the people. This connection would cause the spread of many of the latest acquisitions of science in that direction. Such connection itself would be an object of ambition to able and well-trained young men entering on practice, and would be retained only

so long as the duties were acceptable, and then resigned to younger men fresher from the schools. The dangerous half-knowledge of volunteers would be kept in check by the recognised professional information which would be freely distributed for the public good; and the active service of intelligent coadjutors would in every district receive a wise direction.

If ever the time should come when the Poor-Law system of this country shall be so far remodelled that its organisation is no longer required for purposes of relieving destitution, still, probably, the office of the Minister of Health and Local Administration would find the medical staff too valuable, indeed too necessary, to be dispensed with. The unit now proposed for health and administration would remain the unit still, under essential modifications, and the health officer now charged with the double functions, would be still charged with the local care of the public health, in relation to prevention of disease. The change above specified we neither desire nor contemplate; but our opinion coincides with that of the late President of the Poor-Law Board, the Right Honorable the Earl of Devon, that "however the administration for the relief of the poor be improved, enlarged, or modified, there is no reason apparent why the sanitary functions might not usefully be added to that authority." In any case it will be necessary that the Central Office should note from time to time the proportion of work which falls to the lot of each local

officer, under the respective heads of prevention and of treatment of disease; otherwise, in the local fluctuations of population and labour, conditions of remuneration would not seldom arise, unjust either to the public or the officers.

§ 7. It remains only to say under this head, that the existing arrangements of the Poor-Law Board in Ireland, and the Board of Supervision in Scotland, point to a similar conclusion.

(*b.*) *Duties of Central Inspectors of Public Health.*

§ 8. The establishment of an extensive class of medical public health officers, numbering 4,000 persons, renders necessary an adequate staff of inspectors to co-ordinate their action, and reduce their observations.

The Poor-Law Board has 12 inspectors, intermediate between the board and the local guardians. The Registrar-General has 627 superintending registrars distributed over 11 great registration districts; and 2,197 local registrars of births and deaths.

The Lunacy Commissioners visit in circuits the public and private asylums and patients throughout the whole country.

The two Factory Inspectors have two assistant inspectors, 39 sub-inspectors, resident in their districts, and more than 800 certifying surgeons who may, in

Inspector Baker's words, "render great service by collecting all information procurable, respecting the physical development, the frequency of deformity, the prevalence of disease generally, and particularly of special disorders, above all of epidemics, the distinctive effects of the principal kinds of labour, the average duration of life, the rate of mortality, the prevailing causes of death among the several classes of workpeople coming under their observation.

"Similar advantage will accrue from facts gathered concerning the circumstances and conditions (so far as they relate to the sanitary state of those employed) of labour in any manufacturing process coming under their cognizance; and likewise from facts regarding the moral condition, the prevalence of intoxication, and the state of education among the manufacturing classes in their district."

The Privy Council has one chief medical officer, seven permanent inspectors, who among other duties superintend the execution of the Vaccination Act, and other persons occasionally employed for special investigations.

The Local Government Act Office employs under the Home Office three inspectors whose legal and engineering functions are wholly concerned with the Sanitary and Local Government Acts [c].

§ 9. The minister of public health and local ad-

[c] Parliamentary Return, House of Commons, No. 72, 1870.

ministration will, it is to be presumed, have attached to his department all the above-named officers, more or less exactly under their present divisions, and the other officers also, who in respect of quarantine, burials, alkali works, and the like, are engaged in the administration of Acts having special relation to public health.

In giving a judgment on the question of State organisation relative to public health, much of the general tenour of modern legislation with respect to our internal economy should be present to the mind. It must therefore be remembered that the inspectors who will be responsible for local sanitary administration have collectively, if not individually, to administer Acts [d] bearing on the following subjects:—

§ 10. 1. Plans bearing on sanitary engineering or on local government, i.e. drainage, sewerage, water supply, baths and washhouses, nuisances, offensive trades, smoke, public places of recreation, streets and roads, buildings, cellars, and lodgings, burial-grounds, mortuaries, appointments of officers, artisans' dwellings, labourers' dwellings.

2. Care of personal health and safety, i.e. health in factories and workshops, mines, bakehouses, dangerous occupations.

[d] See Glen on Public Health and Local Government Laws, and Baker on Laws relating to Public Health.

3. Regulation of quality of food, i.e. adulterations, markets, diseased cattle, slaughter-houses.
4. Medical, i.e. prevention of disease, epidemics, endemics, syphilitic disease, small-pox (vaccination), quarantine, lunacy, hospitals[e], whether, first, rate supported, such as workhouse hospitals, or hospitals under local boards; or secondly, voluntary, whether general or special, endowed or subscriptional, county or small village hospitals, or hospitals for the insane, and prisons, sale and adulteration of drugs, poisons, supervision of reports of officers of health.
5. To which must be added medico-legal arbitrations.

§ 11. Now at first sight there seem to be two ways in which the inspection or supervision of all these matters can be attempted; *the first*, by requiring the district inspector to be conversant with every subject just enumerated, and with whatever is properly included under the head of State Medicine; *the second*, by maintaining a rigorous division of subjects, and having as now an inspector for every kind of subject matter. Neither arrangement is in our judgment the right way of attempting to secure the object. The

[e] We think that the whole question of the grounds of admission into rate-supported hospitals must be reconsidered by the Legislature. In Ireland the best results have ensued from the admission on payment of any persons suffering from fevers or severe accidents.

latter plan would be costly and unnecessary, the former in its complete form is impossible: for it may be safely said concerning the subjects suggested for a diploma in State medicine as recently drawn up by Trinity College, Dublin, (see p. 107 in this Appendix,) that it cannot be expected that any one person shall be thorough master of all subjects therein laid down. But with a modification this plan is feasible. The district inspector, though he cannot be thoroughly versed in all the subjects, may be sufficiently master of most of them to know when the machinery under observation is working properly, and to decide when it may be necessary or expedient to call in a special expert. We may assume that the existing staff of public officers (with a few additions in respect of number, and one or two in respect of subject matter), when united under one chief, and acting harmoniously as members of one staff, could thoroughly superintend the whole sanitary arrangements of the country, provided that the 4,000 medical officers now engaged by the State for the medical care of the poor undertake public health functions, and form a class of resident health officers of the kind described in the former section.

§ 12. That this arrangement could be brought into harmony with the existing authorities is plain from a simple enumeration of the heads of existing public health departments and sub-departments (exclusively of the medical authorities of the Army

and Navy,) who in fact now act as "health inspectors[f]."

1. Secretary of State for home affairs, (local government, law, engineering, burials, Alkali Acts, factory and workshops,) inspector of prisons, friendly societies.
2. The Privy Council,—(medical department, quarantine, vaccination, epidemics,) indeed every subject at the will of the Lord President.
3. The Poor-Law Board.
4. The Board of Trade.
5. Registrar-General.
6. Lunacy Commissioners.

§ 13. This is not the place for enumerating all the staff at the disposal of these state functionaries for health purposes. But under the present system there is a great waste of power. It is quite possible that on the same day inspectors from different offices might visit a town for sanitary purposes without any cognizance of the presence of each other, and that, for instance, the general county hospital, the county hospital for the insane, and the workhouse hospital might each be simultaneously inspected by different persons. Now we are of opinion that it is not only unnecessary, but undesirable, that there should be one inspector for the general county hospital, another for the county lunatic asylum, a third for the work-

[f] Inspector is an inadequate word. It is applied to superior officers with great executive power. Thus understood we use it.

house hospitals. We should recommend that all kinds of hospitals should be under the supervision of the same officers; and we think that then the whole system of medical relief in this country would be at once improved. We do not insist on interference with those which are not rate-supported; but nevertheless public inspection of them is desirable; we are confident that all hospitals and dispensaries would benefit by the occasional visit of a skilled inspector acquainted with a wide range of similar institutions, and especially if these institutions were of various kinds of excellence.

§ 13. We are of opinion that the numbers of the present inspectors in the several offices would, with a few additions, meet all the exigencies of the case.

Under the existing system of inspection under the Poor-Law Board, if we exclude four inspectors of schools, 12 inspectors over 648 unions are virtually found to be sufficient. We do not now speak of the office work, to which we shall have briefly to allude presently. If to the 12 inspectors be added, as part of the same office, the seven physicians employed by the Privy Council under their medical officer, the six lunacy commissioners, the 33 inspectors and sub-inspectors under the Factory Acts, and the engineers under the Local Government Acts, with others attached to minor offices, we cannot doubt that this staff of general experts would be nearly sufficient to discharge the duties connected with local

sanitary supervision, except those which belong to special scientific experts, and those which attach properly to the officials at the Central Office.

III. How complete Sanitary Organisation may be best obtained.

§ 14. We now sum up the details of sanitary organisation which we believe will correspond to the three principles laid down at the outset, viz., that it should be universal, efficient and economical.

We believe that there should be—

I. A Minister of Health and Local Government.

II. Six permanent departments under the Minister, for—

a. Law of local government.

b. Engineering.

c. Registration and statistics.

d. Relief of poor.

e. Medical care of public health and poor.

f. Legislation bearing on the profession of medicine.

III. A body of inspectors attached to the Health Office. These are to be of two kinds, as at present, with a third body of consulting experts.

1st. General inspectors attached to, and generally residing in the "registration divisions," "poor law districts," or (as they will also be) "public health areas."

2nd. Special inspectors, viz., legal, engineering, scientific, and medical.

3rd. Special experts whose names should be attached to the Office, and who should advise professionally on special points for special fees, such persons to be appointed for five years and re-eligible.

4th. Then will be required local clerks of unions, and of town councils, local surveyors under local boards and unions, local public health (medical) officers of local boards, unions, parishes, subordinate executive officers.

§ 15. Lastly, we wish to point out both the simplicity and advantages of this organisation, with the various considerations that have led us thereto.

1st. *The simplicity.*

No office now existing need be destroyed. Some will be amplified. A few more clerks will be required at the Central Office, and an arrangement made for obtaining special advice when needed, in aid of the permanent staff of the office, and of the inspectors.

2nd. *The advantages.*

The advantages are many. Not only will the plan be efficient and complete, but it will be economical. The work of the Local Government, Law, and Engineering departments, of the Registrar-General, of the Poor-Law Board, of the medical adviser of the Privy Council, will be harmonised, and will never be chargeable either with unnecessary repetitions or with

omission, as at present. So also neither money nor skill will be wasted.

All reports bearing on public health will be connected one with the other, mutually illustrating each other. They will cover the whole ground of the science of prevention of disease, which has become both so important and serious for the well-being of old and densely-peopled countries. The connection of the office of the Minister of Health with the medical profession, 4,000 members of which would be in direct relation to him, would in itself be beneficial to the whole country. It would disseminate established scientific knowledge uniformly through the country districts, affecting not the medical man only, but the clergy and the schools, doing in that way alone as much at least as direct legislation for the same purpose could do. It would bring to light in every corner all that could be advanced as bearing on the physical condition of the masses of the people, while all crude theories or impracticable plans would instantly fade before the experience of the Central Office.

The publications of the statistical department would exhibit what could be shewn of the progress of sickness. They might give also useful deductions from local meteorological and scientific observations, in connection with those of Kew, the Government Meteorological Office, the Meteorological Society of Scotland, and such private enterprises as those of

Mr. George Symonds on rainfall. They would furnish data for sanitary maps, which can only be of any worth when carefully constructed on rigorous local knowledge, and they would in time get rid of the fallacious application of conclusions deduced from averages, and erroneously applied to particular places or instances. In this way the real causes of variation in death-rate would be more surely ascertained than at present.

Great encouragement should be given to the local public health officers to send in any observations which would promote the progress of accurate knowledge.

The British Public Health Reports thus constructed, printed in an uniform 8vo. form, stitched in a plain distinctive wrapper, and issued in five parts, (legal, statistical, engineering, medical (including medico-legal), and general papers of inspectors,) would be a series of great value. The Central Office should immediately on the first issue of the collected series make arrangement for regular interchange with all foreign countries of similar reports, according to the established usages of academies. These documents should be accessible for reference in the public health library of the minister to all persons connected with the department.

Public Health laboratories should be maintained or aided by grants from time to time. In them not only points bearing on the general pathology of man and animals, would be from time to time investigated

under the best guidance, but persons would be trained to be thoroughly qualified in all medico-legal questions. Hereby some of the scandal of ex-parte scientific witnesses might be checked or removed. Such laboratories should be aided or maintained as well in the metropolis as in some of the great towns where scientific institutions and medical schools exist, e.g. Oxford, Cambridge, Birmingham, Leeds, Newcastle, Bristol. These centres are conveniently situated for various sections of the kingdom. From the state-aided laboratories the inspectors would obtain analyses of waters or, in disputed cases, of any substances requiring examination.

In these observations we have endeavoured to state the points which in the present condition of sanitary knowledge in England appear to be the most urgent. We have remembered that Her Majesty's Government directed us to inquire into the operation of existing laws bearing on all matters which concern the public health, and to suggest improvements in them, or any portions of them. It was necessary for us to inquire to a certain extent into the subject-matter for which these laws were framed, in order to satisfy ourselves, from the evidence of persons practically acquainted with their working, of the extent and direction wherein a reconstruction of them was necessary. We find a general consent in the minds of persons of every class, that it is not so much lack of science, nor lack of machinery, but rather a proper

arrangement of the machinery, which is needed for taking due care of the public health.

To this part of the subject, therefore, we have mainly addressed ourselves, rather than to the further investigation of actual causes of disease. With these, so far as it is permitted to man to control the operations of nature, we are confident that modern science can and will deal.

We are therefore convinced that such an adjustment of the law as may give scope to scientific inquiry in every part of the country, is in this matter the truest wisdom.

Freedom will be both ensured and guided by the plan which has been proposed, and which it was necessary to set out fully even in discussing this special medical portion of the organisation, in order to place that portion in its true light.

Doubt has sometimes been expressed whether the ordinary medical practitioner is sufficiently instructed in preventive medicine. Such doubt would soon prove unfounded, if the organisation we propose were adopted. The medical officers under the Poor-Law are perfectly able to fill up returns, make reports when called upon, point out cause of ill-health, and superintend such remedies as the central authority may suggest or direct. No ordinary medical officers should be expected to discharge the duties of the police, the lawyer, or the engineer.

Besides, it may be stated that such is the improve-

ment, in the last twenty-five years, in the means of education, and in the character of medical students, that a far more serious difficulty has suggested itself to our minds, viz., whether highly-educated youths will take the posts, at present ill paid, which the public may offer to them; and whether the rural districts, when the younger and more highly trained classes of men have occupied the field of practice, will be supplied at all at the present rate of remuneration.

We hope that this will not be the result of higher education; but the Legislature and the public should be prepared to meet it; at all events, there can be little doubt that, when it is found that there is a larger number of these well-educated young men than can find a living by private practice, there will be more than enough qualified to accept these appointments, and that, as in former times, moderate views of life will be found in company with high intellectual attainments.

§ 16. In the evidence before us more than one person has spoken of diplomas in State Medicine. We do not think these diplomas when instituted should be required as necessary from the ordinary public health officers, or at present even from the inspectors.

But in either case when the instruction, qualification, and title of this new diploma shall have been further defined, the Government should encourage all health officers to obtain some such qualification, or at

all events the special training which it implies. We do not think this training should be forced on every medical practitioner as a condition for an ordinary licence.

§ 17. We forbear to enter into complete details in this or any other part of our subject, since we think that the Health Minister will not only have the greatest opportunity of laying down the particulars for any such scheme, but should, indeed, in fairness, be left unhampered by suggestions which he might find it inexpedient to accept.

For the same reasons, we have not thought it our province to do more than hint at the detailed constitution of the Central Office.

That Office would start with a body of very efficient public servants. With respect to the Legal, Engineering, Statistical, and Medical Departments of the Local Government Act Office, Registration Office, Poor-Law Board, and Privy Council, well-informed persons would unanimously confirm this statement. Consolidation is all that is required to make a central Public Health Office in Great Britain the most efficient that has yet been devised. If this consolidation were achieved, a reasonable number of subordinates under the existing chiefs of departments would effect all that can be desired. The moderate number of inspectors and of clerks that have done the great work hitherto accomplished is a guarantee of economy under the new administration.

§ 18. We may add that although we much regret that Scotland and Ireland were not included in the terms of the present, as well as of the former Commission, it has nevertheless proved to be necessary to examine several persons of eminence from those parts of the kingdom. We are satisfied that the plan proposed for England will be found equally adapted both to Ireland and to Scotland, and will be favourably received in both countries, where in truth sanitary administration is in some respects in advance of us. In Scotland indeed, under the Public Health Act of Scotland, 1867, summary powers are given to the local authorities to execute, and to the Board of Supervision for the relief of the poor to direct, complete regulations in every department that concerns the public health. And in Ireland the public health functions of the Poor-Law Commissioners are becoming more and more extended and effective. It is satisfactory, moreover, to find that the noble efforts which are made for the sanitary improvement of India will support and be supported by the general methods herein recommended. And although we shall have no formal connection with the sanitary codes of the United States, Germany, France, Denmark, Belgium, and other countries that have supplied us with help and suggestions, yet we are equally sure that the general scheme here proposed will coincide with the broad views of some of the best thinkers in those countries.

§ 19. We have not touched on the relations to the Central Health Office of the skilled class of medical officers in the Army and Navy, to whom the country owes much of the present amount of sanitary knowledge. The working of the Contagious Diseases Acts, the questions affecting military and naval Hospitals, and the important statistics of the Army and Navy, will make it quite necessary that these bodies should be represented in some manner at the Public Health Office. We presume that the Medical Council of Education also will have an immediate official connection with a Minister whose office, under the proposed scheme, would contain so many persons intimately acquainted with the medical necessities of the nation[g].

Lastly, we have not omitted to weigh the relation of our views to further social changes in respect of local administration. Changes in local taxation, in counties, in unions, even in parishes, will not affect our system, nor would the mode of election of local and sanitary boards, nor even any radical change in the constitution of the Poor-Law Board so often discussed; changes in these could not injure, probably would aid, our sanitary staff. If the sanitary units be small, they will be united; if they be large,

[g] This connection of the Medical Council with the Minister of Health need not affect the relations of the Medical Council to a Minister of Education, if such relation were also deemed to be desirable. It is, at all events, to be wished that the President of the Medical Council should have direct confidential access to some responsible minister.

they will be subdivided for various purposes. The population of these islands is still so irregularly massed, that its sanitary wants cannot be provided for by one rigid set of rules; and it is here and there so dense that the arrangements of nature for water supply and drainage are as inadequate, as they have long become for the production of common food. All the more must there be an all-pervading elastic system which may act on local ignorance with rapidity, and may at the same time allow local knowledge and energy to have full play, in making the best of the complicated and often miserable conditions of modern life. In all conceivable modifications of the national economy a staff such as is now proposed will in some mode of organisation be necessary for the maintenance of the physical powers of our people.

October 18, 1870.

APPENDIX B.

(See p. 67.)

TRINITY COLLEGE, DUBLIN.

SUBJECTS OF STUDY *recommended to Candidates for the Qualification in* STATE MEDICINE.

I. LAW.

THE Candidate should have an accurate knowledge of the legislation relative to sanitary measures, for several reasons:—1st. That he may direct his attention to their workings so as to be able, when his advice is required, to shew how they may be improved, or how far they are a useless interference with individual liberty. 2nd. That he may be able to state (when consulted) whether they are duly observed, or whether they ought to be enforced by more stringent regulations, or by a more active police. 3rd. That knowledge will be important in directing him how to arrange and classify that statistical information which it may become his duty to collect, to digest, and to publish.

The Candidate should be acquainted with all the laws which relate to the conduct and duties of medical men, with reference to Vaccination, Inoculation, Insanity, Lunatic Asylums, and Certificates of Deaths and Births.

II. Engineering.

1. The Candidate should be able clearly to understand the several Maps, Plans, and Sections of any building, without being dependent on the explanations of Engineers or Architects, and should be able to use the different Scales attached to them.

2. A knowledge should be required of the Regulations, &c., decided upon for the superficial and cubical space assigned to each individual—both at home and in the Tropics—in Churches, Barracks, Hospitals, Troop Ships, Emigrant Ships, Workhouses, Asylums, Prisons, by the several bodies of Commissioners, Inspectors, and Quartermasters.

3. It would be essential that the details of two or more completed Waterworks for large towns should be mastered, both by a study of the published accounts of such works, and also by frequent visits to every part of the same, from the gathering ground to the final distribution in the city.

4. In like manner, the Sewerage of Cities should be studied, with the Ventilation of Sewers, both by

published statements and reports, and also by visits to works in progress.

5. A knowledge of effects of the application of the Sewage Matter to land, either by irrigation or otherwise, would seem to be essential.

III. Pathology.

Laws of Epidemics—e.g. Typhus, Typhoid, Cholera, Small-Pox. Endemic Disease.

Laws of Contagion and Infection :—

Vaccination.

Influence of Hereditary Disposition: Age, Sex, Race, Locality, Occupation.

Destitution. Deficient Air, Water, Food; Abuse of Alcoholic Drinks. Want of Drainage.

Evidences of Insanity and Imbecility of Mind.

IV. Vital and Sanitary Statistics.

A.—Science of Statistics as applied to Man :—

Man to be regarded, not as an individual, but as a species.

Influences to which Man is subject—

(*a.*) Purely physical, or *natural*—viz. : (1) sex; (2) age; (3) locality; (4) periods; (5) seasons; (6) hours of the day.

(β.) Moral or *disturbing.*

Man is distinguished from the lower animals by the operation of this second group.

Determination of *typical* Man under a physical aspect, comprising—

(I.) All that belongs to the *life* of Man:

1. *Reproduction* of Man—statistics of births, fecundity, and still-births, as influenced by (α) and (β).
2. *Mortality* of Man—as influenced by (α) and (β); Duration of Life; Population; Epidemics; Insurance of Lives.

(II.) All that concerns the development of Man:

1. *Height*—growth, laws of—formulæ.
2. *Weight*—relations between height and weight—laws—conclusions.
3. *Strength*—dynamometer—vital capacity—agility—respiration—rate of the heart.

B.—Practical Application of Statistics to Medicine:—

Calculation of Averages and Percentages.—Application to ratios of Births and Deaths in local populations. Principles of Registration of Disease and Mortality. Determination of annual and percentage ratios from actually observed registrations. Comparison of periods

in localities as regards the birth-rate, marriage-rate, and death-rate. Framing of local statistics of food, vegetable and animal life. Observation and registration of epidemic and endemic diseases. Epizoötics. Epiphytics. Registration of Meteorological Phenomena. Method of using all the above in the elucidation of the causes of disease. Application of Statistics to Therapeutical Questions. Effects of sanitary improvements.

V. Chemistry.

Air.

Atmospheric Air—its constitution, and how altered by respiration. Sources of the Carbonic Anhydride of Atmospheric Air, its average amount, causes of its nearly equable diffusion, and reason why it is not on the increase.

Maximum amount of Carbonic Anhydride in air respired as often as possible. Quantity of it in the air of crowded rooms—how determined by experiment.

Means by which the Carbonic Anhydride in a room of given dimensions, and inhabited by a given number of persons, may be restrained within given limits.

Ammonia of the Atmosphere, whence derived, its uses in nature, and the best methods of ascertaining

its amount by a gravimetric process, or by a colour-test. Ozone. How detected in the Air, and sanitary uses attributed to it.

Recent experiments which prove that ammonia, and azotized organic matters exist in the Pulmonary Halitus.

Water.

Waters—*Hard* and *Soft*. Meaning of these terms.

Rough means of judging of the hardness of a water.

Precise degree of hardness, how determined.

Some hard waters are softened by boiling, others not. Cause of the difference.

Nature and origin of deposits in boilers, and how to prevent their production.

Hard and Soft Waters have not the same action on lead. In what does the difference consist, and how is it explained? Dissolved lead, how estimated?

Different forms in which Nitrogen is found in waters, and modern methods of estimating its amount in each case.

Nitrates and Nitrites of Water. Origin of, and how detected, and estimated.

Constitution of air occurring entangled in ordinary water.

Flood Water of Rivers—how decolorized in nature, and how by artificial means.

Gaseous Poisons.

Positive and Negative Gaseous Poisons.

Natural and Artificial Sources of Carbonic Anhydride.

Choke Damp.—Where generally encountered, and how distinguished from Carbonic Oxide, Hydrogen, and Nitrogen.

Products of the combustion of Charcoal, Wood, Peat, and Coal.

Sulphurous Anhydride.—How produced by the combustion of impure Coal. Tests for its presence, and method of ascertaining its amount.

Carbo-Hydrogens.—Marsh Gas. Olefiant Gas.

Fire Damp—What? Injurious results of its explosion.

Safety Lamp—its principle. Caution to be observed in its use.

Analysis of the mixture of Gases which compose Fire Damp.

Sulphide of Hydrogen (Sulphuretted Hydrogen).

Characters which distinguish it from other Gases.

Amount of it in Air—how determined with accuracy. Methods of decomposing it when it occurs in the air of an apartment.

Noxious Gases and Vapours in the Air of Sewers and Privies.

Probable origin of the Sulphide of Hydrogen of Sulphureous Waters.

Experiments of Thenard and Dupuytren, and of Parent Duchatelet on the poisonous action of Sulphide of Hydrogen.

Leading Deodorizing and Disinfecting Agents.

1. Chlorine and Chloride of Lime.
2. Nitric Acid in the vaporous state.
3. Carbolic Acid.
4. Nitrate of Lead. Chloride of Zinc.
5. Condy's Liquid (Permanganate of Potassium).

Constitution of those different Agents; different ways in which they act, and how they are applied.

VI. Meteorology.

Meanings of the phrase *mean temperature*, when applied to a day, a year, and a place.

Thermometers employed for shewing the maximum and the minimum temperature of each day, and manner of dealing with such observations so as to deduce from them the true mean temperature.

Circumstances which influence the mean temperature of a place.

Climates—division of. Not determined exclusively by mean temperature. Isothermal lines.

Barometer—how made? Purpose to which it is applied.

Barometer with movable scale. Barometer with fixed scale. Two varieties of the latter, according as the level of the mercury in the cistern varies, or is made the same at each observation.

Dew point, what? Force of vapour at Dew point —how determined by a wet and dry thermometer. How directly by Daniell's Hygrometer?

Amount of vapour in air not a measure of its humidity.

Fraction of saturation—what it means.

Rain-fall—how measured. Construction and use of Rain Gauge.

Probable supply of water within a given area—how inferred from Rain-fall.

Electrical condition of air—how determined?

Electrical state of the atmosphere in steady weather, and at different heights.

Electrical state of the Air in broken weather. Origin of Atmospheric Electricity.

Paratonerres.—How erected, and theory of their action.

Returning Shock.—How explained.

VII. Medical Jurisprudence.

Includes all the applications of Medical Science to legislative, administrative, or judicial proceedings. The one great division constituting Hygiene and

Medical Police; the other, Forensic Medicine, to which belongs Toxicology, which itself forms a connection between the two.

1. *Hygiene,*

As it regards the individual, is part of the Practice of Medicine; but it forms the basis of that which concerns the community, and is more properly the subject of Law.

Besides the assistance which it may contribute towards obtaining the abatement of *Nuisance*, injurious to health, this involves the consideration of—

(*a*) Water supply to towns; Contaminations of Water; Drainage.

(*b*) Contaminations of Air: as by the exhalations of organic decomposition—e.g. from *cemeteries*, and the noxious vapours discharged from certain manufactures.

(*c*) Capacity of Dwellings, Hospitals, Lunatic Asylums, &c.; their supply of solar light, and their ventilation; adaptation of interiors to the healthy accommodation of the largest number of inmates they are to receive.

(*d*) Local circumstances favourable to the development of disease: *Malaria;* Impure Water Supply; Foul Air; Overcrowded Habitations; Diseases incidental to trades and professions; and the means by which it is proposed to arrest such development, or to restrict the

spread of zymotic, contagious, or infectious diseases; Mediæval and recent laws on these subjects.

(*e*) Geographical distribution of diseases.

(*f*) Endemic diseases. Epidemics. Quarantine, and other preventive measures.

(*g*) Diseases arising from vitiated food. Diseases communicated to man from the inferior animals.

(*h*) Vital statistics; Insurance of lives; Probability of Survivorship; Presumption of Survivorship.

2. *Forensic Medicine.*

(*a*) *Medical Evidence*, either oral or written.

(*b*) *Thanatology:* Signs of Death; Modes of Death; Sudden Death; Causes of Death; Investigation of Wounds; and of Blood-Stains.

(*c*) Determination of the period that has intervened between the death and the inspection; Judicial Exhumations.

(*d*) Whether the death was suicidal, altericidal, accidental, or designed.

(*e*) Criminal *Abortion: Infanticide.*

(*f*) *Asphyxia* neonatorum, suspensorum, submersorum, &c.

(*g*) *Pregnancy*, and questions connected with the generative function and its aberrations.

(*h*) *Toxicology.* Morbid Poisons. Dissecting wounds.

(*i*) *Unsoundness of mind:* Idiotcy congenital, or the result of arrested brain growth; Softening of the Brain; Epilepsy; Ebriety; Delirium Tremens; Monomania, and the plea of Insanity in criminal cases; Testamentary incapacity.

NOTE.—In the allotment of these subjects to different Professors, it is to be remembered that, excluding Law and Engineering, there are several in relation to one another. For example, Analytic Chemistry and Toxicology, Morbid Anatomy and Medical Jurisprudence, Meteorology and Chemistry, Meteorology and Medicine, Medicine and Hygiene, Hygiene and Medical Jurisprudence.

It seems then desirable, as so many of these subjects, so to say, run into one another, that, while the general line of examination is indicated, the Examiners should not be strictly confined to the subjects presumed to belong to their respective Chairs.

TRINITY COLLEGE, DUBLIN.

MEMORANDUM *in reference to the Establishment of a Qualification in State Medicine in the University of Dublin.*

THE study of State Medicine, by which is meant the application of Medical Science to the health and wellbeing of the masses, embraces, amongst others, the following heads:—

Preventive Medicine.
Medical Topography.
Vital and Sanitary Statistics.
Forensic Medicine.
Psychological Medicine.

In the successful study of these branches of Medical Science, a large amount of knowledge of the following subjects is requisite.

Preventive Medicine.

Effects of imperfect Ventilation and Overcrowding. Deficient Drainage. Water and Food Supply. Influence of Locality. Nuisances. Laws of Epidemic and Endemic Disease. Laws of Contagion. Vaccination. Quarantine. Intemperance. Influence of Occupation and Trades.

Medical Topography.

Influence of Locality. Laws of Vegetable and Animal Malaria. Endemic Diseases. Influence of Latitude, Seasons, of Race. Meteorology. Magnetism, Atmospheric and Terrestrial.

Vital and Sanitary Statistics.

Registration of Disease. Registration of Births and Deaths. General Laws of Statistical Science. Laws of Viability. Hereditary Disease. Life Assurances.

Forensic Medicine— Psychological Medicine.

Law of Evidence. Laws relating to the Public Health. Morbid Anatomy. Injuries to the Person. Causes of Death. Toxicology. — Mental Disease. Organic Cerebral Disease. Laws relating to Lunacy and other Mental Imperfections.

It is obviously of the first importance, that whatever be the kind or form of the Qualification given by the University, it should not be attainable without previous graduation in Arts and in Medicine.

Whether the University should confine itself to giving one high qualification only, or create two orders as has been proposed, is a question:—The first, or highest, to be represented by the degree of M.D., which will give a period of three years' study; while the second might be conferred in eighteen

months after the taking the M.B. The higher Degree would be adapted for Experts, or Medical Assessors; the second, for Health Officers, Inspectors, and perhaps Coroners.

It has been suggested that the condition for obtaining the Degree of M.D. should be an enlarged course of Study of State Medicine; whether such should be made imperative on all who sought for the Degree, or whether, on the other hand, it would be advisable to create a separate Degree in State Medicine, are questions of importance.

Should the lower qualification be recommended also, a Certificate, setting forth the subjects of Examination in State Medicine, in which the Bachelor of Medicine had passed, subsequent to his taking the M.B. Degree, might be granted. It is recommended by the Medical Council that, in the amended Medical Act, *qualifications* in State Medicine may be inserted in the Register.

The University of Dublin has peculiar advantages in creating one or both of such qualifications. It has, beside its School of Medicine, Schools of Physical Science, Engineering, and Law—the Pathological Society meets within the walls of Trinity College—the Courts of Law in Dublin are available for the study of Jurisprudence, while the practical study of Psychological Medicine could be carried out in the great Lunatic Asylums of the city.

With respect to the question, as to whether the

qualification should imply a formal curriculum of study, followed by examination, or be attainable by Examination alone, it is to be observed—

1. That the establishment of such a curriculum would imply new and complicated arrangements, and, perhaps, new Professorships, which latter, as the classes would be probably small, would require to be endowed.

2. That if the qualification be given on standing and Examination only, there is a full staff of Professors, not of Medical Sciences alone, but of Physics, Engineering, and Law, who could form an effective Court of Examiners. And it appears reasonable that, after graduation in Medicine, the insisting on a formal curriculum should be dispensed with, and Examination alone be the test. Yet it is a question whether, previous to Examination, certain conditions should not be required, such as the practical use of chemical tests, certain parts of Engineering Science, the practical study of mental disease in a Lunatic Asylum, and attendance on Courts of Law.

The Court of Examiners might be constituted as follows:—

The Regius Professor of Physic.
The Professors of Medical Jurisprudence.
„ the Institutes of Medicine (Hygiene).
„ Chemistry.
„ Engineering.

The Professors of Physics and of Natural Philosophy.
„ Medicine.
„ Law.

In place of insisting on a detailed Curriculum of Lectures, some of the following subjects of study might be indicated, as for example :—

1. Toxicology. Morbid Anatomy. Analysis of Air, Water, Food and Secretions. Use of the Microscope. Meteorology. Such parts of Engineering Science as relate to Preventive Medicine.

2. Mental Diseases. Legal Medicine. Hygiene. Epidemics. Sanitary Law. Laws of Evidence. Statistics.

The Candidate might be permitted to be examined in the first division of these subjects at the end of eighteen months after the taking the M.B. Degree. Thus, the lower qualification might be obtained. On attaining standing for the M.D. Degree, he might be examined in the second division of subjects. In this way the present system of the half M.B. Examination would be followed. But the division, as in the case of the M.B. Degree, should not be compulsory.

January, 1870. W. S.

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